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SUN WARMS AND COOLS THE EARTH

By Dr Zbigniew Jaworowski

I was born on 17 October 1927 in Krakow , Poland . I graduated as a physician in 1952 at the Medical Academy in Kraków. In 1963 I received PhD in natural sciences and in 1967 DSc in natural sciences. I became a docent in 1967 and in 1977 a full professor. Since 1958 I am married to Zofia Kielan-Jaworowska, who is a professor emeritus of paleontology at the University of Oslo and at the Institute of Paleobiology of the Polish Academy of Sciences in Warsaw; and the editor of the Acta Paleontologica Polonica; she is a full member of the Polish Academy of Sciences, of the Norwegian Academy of Sciences and of the Academia Europea. We have one son, and two grandchildren.

Between 1951 and 1952 I worked as an assistant at the Institute of Physiological Chemistry of the Medical Academy in Kraków, studying chemical carcinogenesis. Between 1953 and 1958 I worked as a radiotherapist at the Oncological Institute in Gliwice . In 1957 and 1958 I served as a medical doctor of the Polish International Geophysical Year Expedition to Spitsbergen , where I studied activity concentration in precipitation of radionuclides from nuclear test explosions and concentration of CO₂ in the atmosphere. Between 1958 and 1970 I worked in the Institute of Nuclear Research in Warsaw as a head of the Laboratory of Radiotoxicology. In 1960/1961 I worked at the Department of Physics of the Research Cancer Institute in London as a stipendiary of International Atomic Energy Agency measuring content of ²¹⁰Pb in bones of British population and in hair of Polish uranium miners. Between 1970 and 1987 I worked in the Central Laboratory for Radiological Protection in Warsaw as the head of the Department of Radiation Hygiene. Between 1982 and 1984 I worked in the Centre d'Etude Nucleaires in Fontenay-aux-Roses near Paris as a guest professor. In 1987-1988 I worked at the Biophysical Group of the Institute of Physics , University of Oslo . In 1988-1990 I worked at the Norwegian Polar Research Institute in Oslo . Between 1990 and 1991 I worked for six months as a visiting professor at the National Institute for Polar Research in Tokyo . Between 1991 and 1993 I was working in the Institute for Energy Technology at Kjeller near Oslo . Since 1993 I am working at the Central Laboratory for Radiological Protection in Warsaw , now as the Senior Scientific Advisor.

I studied: (1) internal contamination of man and animals with radionuclides; (2) development of analytical methods for detection of pollutants in the human body and environment; (3) metabolism of radionuclides; (4) biological effects of ionizing radiation; (5) impact of nuclear war on population; (6) remedial measures in nuclear emergencies; (7) environmental levels and migration of radionuclides and heavy metals; (8) relation between pollutants in the environment and in man; (9) historical monitoring of radionuclides and heavy metals in man - the first discovery that lead level in human bones was up to two orders of magnitude higher between 11th and the end of 19th century than

now; (10) historical monitoring of radionuclides and heavy metals in environment; (11) vertical distribution of natural radionuclides, fission products and heavy metals in the troposphere and stratosphere; (12) determination of natural radionuclides, fission products and heavy metals in contemporary and pre-industrial ice from glaciers in both hemispheres, for studying the geographical distribution, temporal changes and flux of natural and man-made pollutants in the global atmosphere; (13) regional and global impact of pollution caused by coal burning; (14) validity of polar ice core records of greenhouse gases for reconstruction of the composition of the ancient atmosphere.

I was a principal investigator of three research projects of the US Environmental Protection Agency on: (1) historical and geographical changes in distribution of pollutants in the global cryosphere, in components of terrestrial environment, and in human body; (2) on vertical distribution of pollutants in the troposphere and stratosphere; and (3) on toxicology of organically bound tritium. I was a principal investigator of four research projects of the International Atomic Energy Agency on radiotoxicology.

I organized 10 expeditions to the polar and high altitude temperate glaciers (Spitsbergen , Alaska , Northern Norway - Svartisen, Southern Norway - Jotunheimen, Alps, Tatra Mountains, Himalayas, Ruwenzori in East Africa, Peruvian Andes and Antarctica). Their aim was to measure (for the first time) the mass of stable heavy metals and activity of natural radionuclides entering the global atmosphere from natural and man-made sources, and to determine their pre-industrial and contemporary annual flows. During these studies the mass of global annual atmospheric precipitation was measured (for the first time) by means of radioactive tracers (natural ^{210}Pb , and ^{137}Cs from nuclear tests).

I am or I was a member of: (1) Polish Society of Radiation Research, (2) Polish Society of Medical Physics, (3) Commission of Radiobiology of the Committee of Medical Physics of the Polish Academy of Sciences, (4) Polish Commission of Nuclear Safety - until 1980), (5) Polish Society of Polar Research, (6) Polish National Council for Environmental Protection - until 1987, (7) Committee of the Basic Medical Sciences of the Polish Academy of Sciences - until 1987, (8) Health Physics Society (USA), (9) Founding member of the International Society for Trace Element Research in Humans, (10) Commission of Radiological Protection of (Polish) National Council of Atomic Energy (1984-1988 chairman) - until 1989, (11) Norwegian Physical Society, (12) International member of the Advisory Committee of BELLE (Biological Effects of Low Level Exposures), (13) Member of the Scientific Committee of Environmentalists for Nuclear Energy, (14) I am the president of the Polish Branch of Environmentalists for Nuclear Energy.

I am a member of the editorial boards and scientific committees of several Polish and foreign scientific journals. Since 1973 I am a member of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR); in the years 1978-1979 I was the vice-chairman, and 1980-1982 the chairman of this Committee. I was participant or chairman of about 20 Advisory Groups of International Atomic Energy Agency (IAEA) and of the United Nations Environmental Programme (UNEP). In 1986 I was a member of the Polish Governmental Commission on the Effects of Chernobyl Accident. I published more than 300 scientific papers, 4 books and I participated in writing and editing 10 published scientific documents of UNSCEAR, IAEA and UNEP. I published about 100 articles in Polish newspapers and popular science magazines.

In an op-ed in a Polish weekly I commented recently on a remarkable decrease of global temperature in 2008, and over the past decade. Not surprisingly the op-ed evoked a strong reaction from Polish coworkers of IPCC, denying the existence of cooling. Surprising, however, was that the criticism dwelled upon a “global climatic conspiracy”, and “colossal international plot”. I did not use these words nor even hinted at such an idea. The idea, well described in Wikipedia, was probably apparent from the data and facts I presented, showing weaknesses of the man-made global warming hypothesis. Without irrational political or ideological factors, it is really difficult to understand why so many people believe in human causation of the Modern Warm Period, which was never plausibly proved by scientific evidence. Some of these factors I will discuss here.

Suicidal conspiracy

A conspiracy stratagem was openly presented by Maurice Strong, a godfather of the global environmental movement, and a former senior advisor to Kofi Annan, U.N. Secretary-General. In 1972 Strong was a Secretary-General of the United Nations Conference on the Human Environment, which launched the world environment movement, and he has played a critical role in its globalization. In 1992 Strong was the Secretary-General of the “World Summit” conference in Rio de Janeiro, where on his instigation the foundations for the Kyoto Protocol were laid.

In an interview Strong disclosed his mindset: *"What if a small group of world leaders were to conclude that the principal risk to the Earth comes from the actions of rich countries? And if the world is to survive, those rich countries would have to sign an agreement reducing their impact on the environment. Will they do it? The group's conclusion is "no." The rich countries won't do it. They won't change. So, in order to save the planet, the group decides: Isn't the only hope for the planet that the industrialized civilizations collapse? Isn't it our responsibility to bring that about? This group of world leaders form a secret society to bring about an economic collapse."* (Wood, 1990). Wikipedia lists Strong as one of the main partners in the global warming plot, together with Kofi Annan, Al Gore, George Soros, Mikhail Gorbachev, Jacques Chirac, United Nations, Bilderberg Group, Club of Rome, and ecological movements (Wikipedia, 2008)).

The misanthropic ideology professed by Strong, the representative of top echelons of the United Nations Organization, is probably more dangerous than former intellectual aberrations of humanity. It seems that the fear of population explosion stays behind it. At the Rio 1992 Earth Summit Conference Maurice Strong stated: *"We have been the most successful species ever; we are now a species out of control. Population must be stabilized, and rapidly"*. Many proposals preceded and followed this statement, starting with Thomas Huxley's advise that *"the surplus population must be disposed of somehow"* and that the unfit *"should be chloroformed"* (Huxley, 1898), followed in 1974 by a rather mild and balanced classified document of the US State

Department, authorized by Henry Kissinger (Kissinger, 1974). The document targeted 13 countries (obviously none of them European, American and Japan) for depopulation by mass sterilization, abortion, family planning and restriction of food aid. In 1974 the report of Club of Rome proposed 0.5 to 1 billion people as the “ideal sustainable population” of the world (Laszlo, 1977), in agreement with a later UN suggestion of 1 billion level (UNEP, 1995). An outspoken media mogul and owner of CNN, Ted Turner, in a 1992 interview with Audubon magazine said: “A total world population of 250 – 300 million people, a 95% decline from present levels, would be ideal”. Jacques Cousteau suggested: *“In order to stabilize world population, we must eliminate 350,000 people per day”* (Anonymous, 2008). A biological method was proposed by Prince Philip: *“In the event that I am reincarnated, I would like to return as a deadly virus, in order to contribute something to solve overpopulation”* (Prince, 1988). Less drastic, but in similar vein, are recommendations for medical profession on population control by professor Maurice King published in prestigious scientific journal The Lancet: *“a deliberate quest of poverty ... reduced resources consumption ... setting levels of mortality control”*. As a new global strategy King advised that: *“the birth rate is unlikely to be lowered by measures designed to reduce the child death rate ... by programmes ... for mass immunization”*. Arguing for *“sustainable development”* King demands that *“Reduced childhood mortality must no longer be promoted... We should refrain from advocating public health policies for other communities ... desustaining measures such as oral rehydration should not be introduced on the public health scale”* (King, 1990). This sounds as a faithful repetition of Thomas Malthus’s hair-raising recommendations (Malthus, 1798)¹.

¹: “All the children born, beyond what would be required to keep up the population to this level, must necessarily perish, unless room be made for them by the deaths of grown persons. ... To act consistently, therefore, we should facilitate, instead of foolishly and vainly endeavoring to impede, the operation of nature in producing this mortality, and if we dread the too frequent visitation of the horrid form of famine, we should sedulously encourage the other forms of destruction, which we compel nature to use. Instead of recommending cleanliness to the poor, we should encourage contrary habits. In our towns we should make the streets narrower, crowd more people into the houses, and court the return of the plague. In the country we should build our villages near stagnant pools, and particularly encourage settlements in all marshy and unwholesome situations. But above all, we should reprobate specific remedies for ravaging diseases: and those benevolent, but much mistaken men, who have thought they were doing a service to mankind by projecting schemes for the total extirpation of particular disorders. If by these and similar means the annual mortality were increased ... we might probably every one of us marry at the age of puberty and yet few be absolutely starved” (Malthus).

Strong's interview (Wood, 1990), followed by announcements of top American bureaucrats² explains the motives of IPCC, of a part of climatologists, politicians and media. The issue of climate was politicized decades ago (Lindzen, 2005), and lost its purely scientific character, in service of ideological, political and business aims. Involved in this game are group interests of scientists, whose professional integrity is confronted with prospects of lavish projects and esteem.

Sources of Strong's ideology may be found in the "Report from the Iron Mountain", a result of four years study by a fifteen-person group of American intellectuals, including future editors of Nation Victor Navasky and Richard Lingeman, novelist E.L Doctorov, and economist John Kenneth Galbraith (Lewin, 1967). The 152 pages report (reedited in 2002 by DIANE Publishing Company) discussed long-term perspectives of the coming end of the epoch of wars, and a need of introduction of their substitutes to counter the risks caused by standing peace. The "Report From Iron Mountain" was first classified by President Lyndon Johnson, but after few years it was published in a book form as a "leak". The thoughts from this report, probably reflected opinions of the American intellectual and political elites of the time. Immediately the book became a bestseller, and later on many of the programs and institutions it called for, have become the actual policy within the national and international agenda.

The report proposed creation of the global police forces, introduction of a modern form of slavery, eugenics, mass euthanasia, mass welfare, inventing new quasi-religious myth on planetary risks, and exaggerated environmental protection calling for widespread government spending and controls, etc. It started a row of events leading to a fulminating development of ecological movements and of the current climatic hysteria. Soon after its first publishing the United States Congress accepted the National Environmental Act (1969), and on December 2, 1970 President Richard Nixon erected the giant US Environmental Protection Agency (17,648 employees in 2003), the first ministry of environment in the world. The legalisation of abortion and widespread population control measures, UN Social Development Programme, UN Environmental Programme (with Maurice Strong as its first chairman), UN Commission on Population and Development – all promoting international environmental controls, worldwide social welfare programs, and population control, seem to fulfill the message from the Iron Mountain.

² Timothy Wirth, President Clinton's Assistant Secretary for Global Affairs: *"We've 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 E. Benedick, Special Advisor to the Secretary General of the 1992 U.N. "Earth Summit", and the President of the Committee for the national Institute for the Environment: *"A global climate treaty must be implemented even if there is no scientific evidence to back the greenhouse effect"*.

One of the most important recommendations of the “Report from the Iron Mountain” is a need to concentrate the public opinion on the contamination of the planetary environment, and on “**fictitious global enemies**”. This recommendation was realized by the Club of Rome in its misanthropic report “The Limits to Growth” (Meadows et al., 1972) of which 3 million issues were published. In Nature the report was defined as “ludicrous study” (Beckerman, 1994), and all its predictions of catastrophic effects of pollution (e.g. a total loss of life in the Baltic sea in 2000, due to pollution and lack of oxygen) and of depletion of resources, appeared false³. However, this did not hind publication of its second edition under a changed title “Humanity at the Turning Point” (Mesarovic and Pestel, 1976). Its extremely dangerous, paranoid motto: “*The World has Cancer and the Cancer is Man*”, was widely accepted by Greens, together with recommendation to limit everything, euphemistically called “*sustainable development*”.

The policy of intimidation with an endless procession of menacing specters – all imagined - was continued in the third report of Club of Rome (King and Schneider, 1991). Its message is as follows: “*In searching for a new enemy to unite us, we came up with the idea that pollution, the threat of global warming, water shortages, famine and the like would fit the bill ... All these dangers are caused by human intervention ... **The real enemy, then is humanity itself***”. Thus, the “**fictitious global enemy**” was found, as recommended in the “Report from the Iron Mountain”. This is really dangerous, because the suicidal war on such an “enemy”, appeals to the best altruistic instincts and good will of the people, many of whom are ready to sacrifice their prosperity and future to defend the planet Earth against non existing threats. This trick ensured the worldwide range of eco-ideology.

The climatic issue became now perhaps the most important agenda of the United Nations and politicians, at least they say⁴. It became also a moral issue. In 2007 addressing the UN General

³ Already in 1968 it was demonstrated that modern civilization reduced the lead level in 20th century humans by a factor of 10 to 100, from the mass of sub-acute lead levels lasting since Medieval ages to the end of 19th century, and in 1981 that the global atmospheric pollution with lead and some other heavy metals was lower in the 20th century than in pre-industrial period: Jaworowski Z. (1968) Stable lead in fossil ice and bones. *Nature* **217**, 152-153, Jaworowski Z. (1990a) A history of heavy metal contamination of human bones. In *Trace metals and fluoride in bones and teeth* (ed. N. D. Priest and F. L. Van De Vyver), pp. 175-190. CRC Press, Jaworowski Z., Bysiek M., and Kownacka L. (1981) Flow of metals into the global atmosphere. *Geochimica et Cosmochimica Acta* **45**, 2185-2199.

⁴ For example: Angela Merkel „*Climate Change is the greatest threat that human civilization has ever faced*”; Barak Obama “*Climate change is real. Not only is it real, it’s here, and its effects are giving rise to frighteningly new global phenomenon: the man-made natural disaster*”; Prince Charles “*Climate change should be seen as the greatest challenge to ever face mankind*”; Gordon Brown “*Climate change makes us all global citizens, we are truly all in this together*”. Tony Blair “*We have reached the critical moment of*

Assembly Gro Harlem Brundtland, the UN Secretary-General's Special Envoy on Climate Change, pointing at climatic skeptics stated: *"It is irresponsible, reckless and deeply immoral to question the seriousness of the real danger of climate change"*. But earlier "scare them to deaths!" morality of "climatists"⁵ was explained by Stephen Schneider, one of their top gurus: *"On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but ... On the other hand, we are not just scientists but human beings as well ... we need to get some broadbased support, to capture the public's imagination. That, of course, entails getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have ... Each of us has to decide what the right balance is between being effective and being honest"* (Schneider, 1989).

The same moral standard is offered by Al Gore: "I believe it is appropriate to have an over-representation of factual presentations on how dangerous (global warming) is, as a predicate for opening up the audience to listen to what the solutions are" (Gore, 2006). In similar vein Rajendra K. Pachari, the chairman of IPCC, commented in the last Fourth PCCC Report: *"I hope this will shock people and governments into taking more serious action"* (Crook, 2007). Thus IPCC does not have ambition to present an objective climatic situation, but rather "to shock" the people to take actions which would bring no climatic effects (NIPCC, 2008), but rather disastrous global economic and societal consequences. Implementation of these actions would dismantle the global energy system, the primary driving force of our civilization. This is what Maurice Strong and other leaders of Green Movement apparently have in mind.

The political and business scale of the problem is reflected by sums planned or already spent to counter the blessed natural Modern Warm Period, one of several similar periods enjoyed by the biosphere over the current interglacial⁶. According to the U.S. Senate Committee on

decision on climate change. Failure to act to now would be deeply and unforgivably irresponsible. We urgently require a global environmental revolution".

⁵ *"Climatology is a science. Climatism is an ideology. Climatologists are scientists. Climatists are social or political organizers who abuse climatology in service of ideologues. Climatology was and still is an investigation of nature. Climatism is the exploitation of the fear of nature to gain power, wealth and social esteem"*. Anonym.

⁶ During the Holocene Warming 7800 to 9500 years ago, at the dawn of the agriculture and great civilizations, the temperature of the Arctic was up to 7°C higher than now, the polar bears and many other species survived there, and were better off than in colder periods [Jaworowski Z. (1990b) Influence of climate changes on animal life in Arctic. Chapter 7 in R. Hanson (ed.) Influence of climate changes in polar regions (in Norwegian). pp. 102-118. Norsk Polarinstitut].

Environment and Public Works, during the past 10 years funds for the promoters of the man-made global warming hypothesis received in the United States alone more than \$50 billion. On the other hand, the “skeptics” who doubt that this hypothesis is true, received during 20 years \$19 million from Exxon Mobile, i.e. 0.04% of what promoters gained in half that time (EPW, 2007).

International Energy Agency announced in June that cutting by half the CO₂ emission will cost the world \$45 trillion up to 2050, i.e. 1.1% of the global GNP each year (Kanter, 2008). For this expenditure one may expect a trifle climatic effect. Even if a substantial part of global warming were due to CO₂ – and it is not – any control efforts currently contemplated, including the punctiliously observed Kyoto protocol, would decrease future temperatures by only 0.02°C, an undetectable amount (NIPCC, 2008).

Recent and future cooling

The maps in Figure 1 show an increasing cooling of the near-surface atmosphere in January – July of 2005, 2007 and 2008 in the Arctic, Antarctica, North America, Australia, Africa, Southern Asia, Pacific and Indian Oceans. This figure also shows the whole year global temperature trends, which in most of this period was lower than in the “record high” year of 1998, and in January 2008 was lower by about 0.8°C. Data from four major datasets show a decrease in temperature of both near-surface air and of the lower troposphere between 2001 and 2008 (Figure 2).

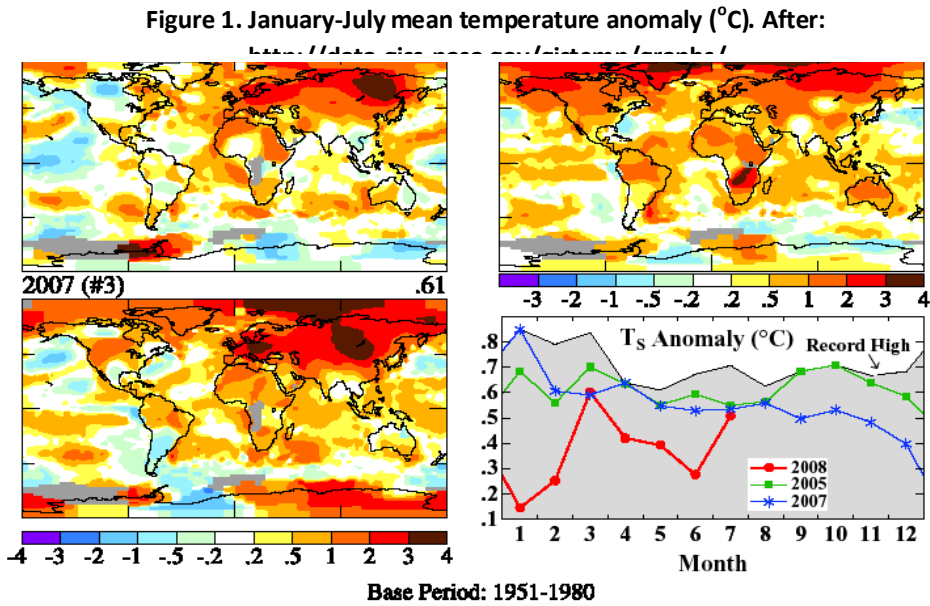
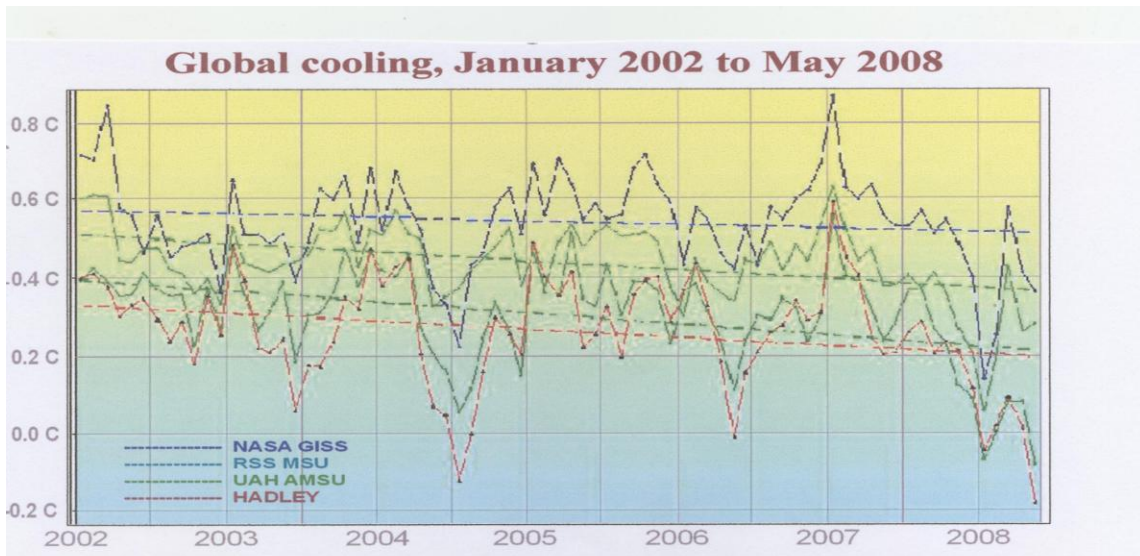


Figure 2. Global mean surface (NASA GISS, HADLEY) and lower troposphere (RSS MSU, UAH AMSU) temperature anomaly ($^{\circ}\text{C}$) since January 2002 to May 2008.

Note that all four datasets show a pronounced downtrend since beginning of 2002. None of the climate models relied upon by the IPCC had predicted this cooling. There has been no increase in worldwide temperatures since 1998. In the first five month of 2008, global temperatures were within the error-margin for temperatures in 1940. After (McLean, 2008).



In the lower troposphere the mean temperature of the first eight months of 2008 was by 0.35°C cooler than in 2007. Since 1998 there was a decreasing trend in the lower troposphere temperature. Between 1998 and 2008 the temperature of the first eight months dropped by 0.63°C (Figure 3). Both surface and troposphere observations may suggest that we are entering a cool phase of climate. These observations are in a total disagreement with climatic model projections, based on an assumption that the current Modern Warm Period is due to anthropogenic emissions of CO_2 (IPCC-AR4, 2007). The annual increment of global industrial CO_2 emission increased from 1.1% in 1990-1999 to more than 3% in 2000- 2004 (Raupach et al., 2007), and is still increasing. Thus, according to IPCC projections the global temperature should be increasing now more rapidly than before, but instead we see a cold spell (Figures 4 and 5). It is clear that cooling is not related to the rapidly increasing CO_2 emission. Its cause is rather the Sun's activity, which recently dropped precipitously from its 60 year long record in the second half of the 20th century, the highest in the past 11 centuries (Usoskin et al., 2003), to an extremely low current level.

Figure 3. Mean monthly January – August temperatures of lower troposphere between 1998 and 2008 (°C). Based on http://vortex.nsstc.uah.edu/data/msu/t2lt/tlghmam_5.2.

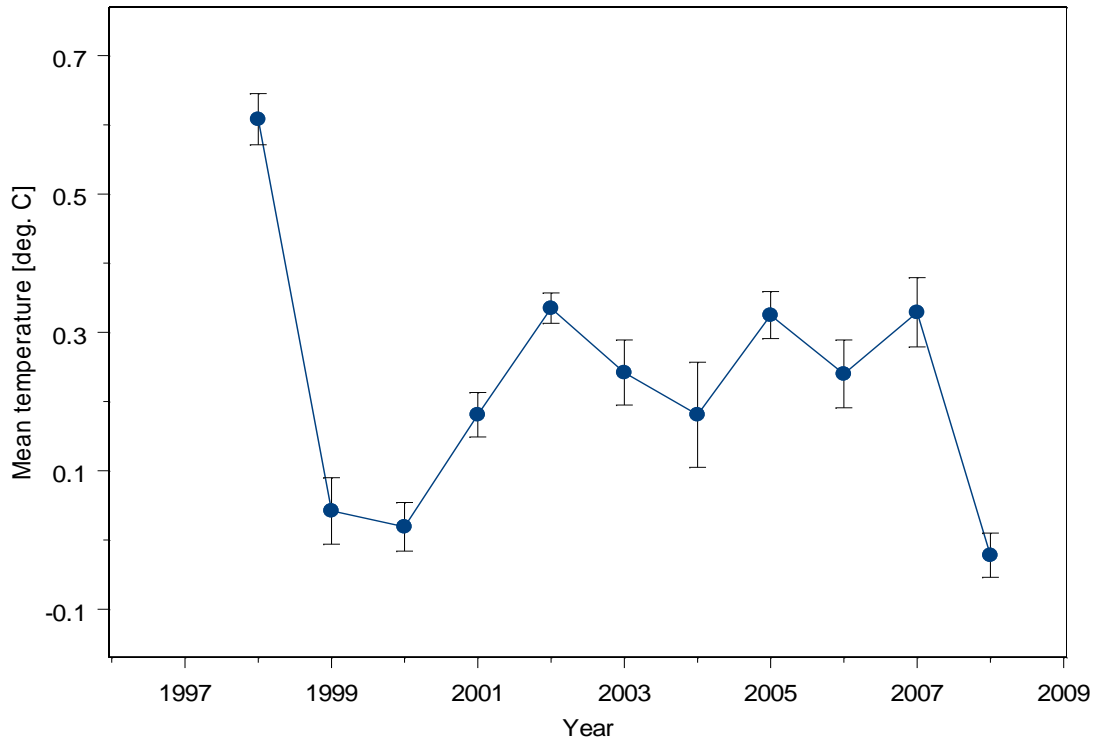


Figure 4. IPCC predicted warming. After (Easterbrook, 2008).

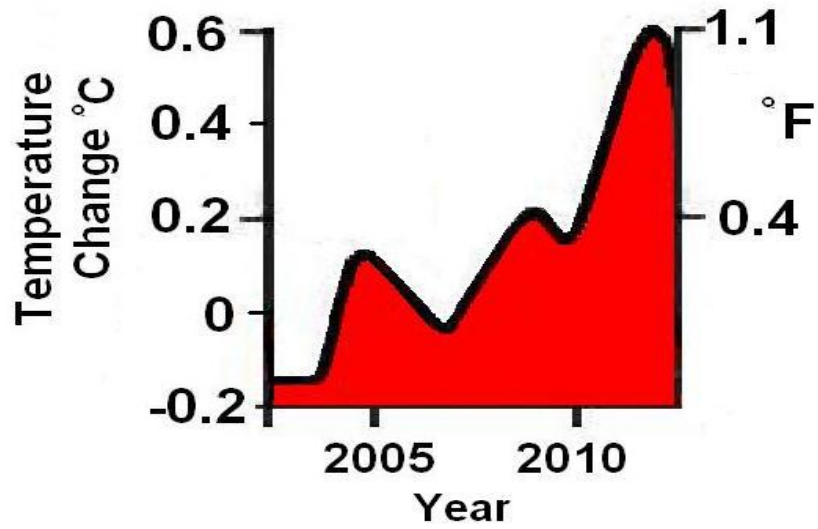
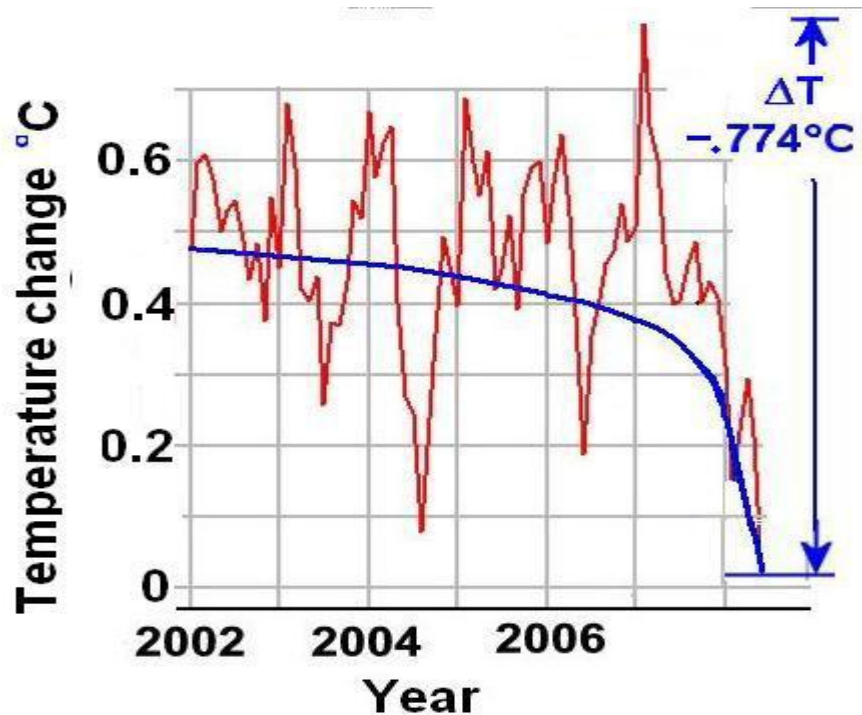


Figure 5. Measured cooling. After (Esterbrook, 2008)



Sun activity is reflected in the number of sunspots, which normally shows an 11-year periodicity (or 131 month plus or minus 14 month). The current sunspot cycle no. 23 had a maximum in 2001 (150 sunspots in September). NASA officially declared it over in March 2006, with a forecast that the next cycle no. 24 will be 20 to 50 % stronger than the old. But until now the Sun remained quiet, with only few sunspots sighted both from the old cycle, and from the new one declared again by NASA to start on December 11, 2007. However, the Sun's activity was still low in the first part of 2008 (NOAA, 2008), and August 2008 was (probably) the first month without sunspots since 1913 (some observations noticed not a "spot" but a tiny short-lived "pore" on 21-22 August). It seems that we still remain in the cycle 23. William Livingston and Matthew Penn from US National Solar Observatory in Tucson, Arizona found that not only the number of sunspots decreases, but also the strength of their magnetic field. Between 1998 and 2005 the magnetic strength of sunspots decreased linearly with a slope of 77 Gauss per year, and its extrapolation shows that it will reach a minimum value at 2015. Livingston and Penn concluded that "this date is when sunspots will disappear from the solar surface" (Livingston and Penn, 2008). In 2005 they submitted their study for publication in the Science magazine, but the paper was rejected on the grounds that it was purely statistical, but their projection fits current observations. The unusually long low activity of Sun suggests that we may be entering a next

Maunder Minimum, a period from 1645 to 1715, when almost no sunspots were visible. This was the coldest part of the Little Ice Age (1250—1900), when rivers in Europe and America were often frozen, and the Baltic Sea was crossed on ice by armies and travelers. Other authors suggest that the Earth will be facing a slow decrease in temperatures in 2012-2015, reaching a deep freeze around 2050-

2060, similar to cooling that took place in 1645-1715, when temperature decreased by 1 to 2°C (Abdussamatov, 2004; Abdussamatov, 2005; Abdussamatov, 2006). Another analysis of sunspot cycles for the period 1882-2000, projected that the cooling will start in the solar cycle 25, resulting in minimum temperature around 2021-2026 (Bashkirtsev and Mashnich, 2003). A long-term cooling, related to Sun's activity, was also projected for the period around 2100 and 2200 (Landscheidt, 1995; Landscheidt, 2003).

The current Modern Warm Period is one of innumerable former natural warm climatic phases. Its temperature is lower than in the 4 former warm periods over the past 1500 years (Grubb, 2008). Unfortunately it seems that it comes to an end, and the recent climatic fluctuations suggest that perhaps a new, full scale ice age is imminent. It may come in the next 50 to 400 years (Broecker, 1995; Bryson, 1993), with ice caps covering northern parts of America and Eurasia.

Reliability of IPCC

Each of four IPCC reports became a holy book for UN, Brussels and national bureaucracies. These credulously accepted reports are now a basis of long-term political and economic decisions. If implemented, the decisions will bring a global scale disaster. The credulity is astonishing, as many impartial perusals of the IPCC work demonstrated that its assessments and foundations, notwithstanding an impressive numerical and graphic façade, are clearly biased, and should be rejected as not providing adequate climatic information for policymakers. Criticism of IPCC publications and methods of work comes both from outside and from its own inside. More than a decade ago two editorials in Nature (Anonymous, 1994; Maddox, 1991) listed similar arguments against IPCC, as a long string of recent critics, [for example, (Henderson, 2006) (Henderson, 2007) (Castles, 2008) (NIPCC, 2008)]. The flawed process, deep-seated problems of bias and lack of objectivity, factual errors, important omissions, and "greenpledge card" were apparent from the very first report of IPCC. Among the critics are 13 members of IPCC, including the deputy chairman of IPCC Yuriy Izrael, member of the Russian Academy of Sciences; Richard Lindzen one of the leading meteorologists and "*leading author*" of a IPCC report; Vincent Gray, official reviewer of all IPCC reports; or Paul Reiter malaria specialist,

who resigned from working for IPCC in protest against exaggerated and always negative assessments of medical effects of warming⁷; and John Christy “*leading author*” of IPCC. Christy, the director of the Earth System Science Center in Huntsville, Alabama, is one of the founders of the satellite system of global temperature measurements. In an op-ed in Wall Street Journal of November 1, 2007 he told the world that not only does he believe it is unproven that humans cause global warming, but he also refused his “slice” of the 2007 Nobel Peace Prize awarded to IPCC (Christy, 2007). He said: “*the award honor(s) promoting the message that the Earth’s temperature is rising due to human-based emissions of greenhouse gases....but I see neither the developing catastrophe nor the smoking gun proving that human activity is to blame for most of the warming we see.*” An effort by academics is now underway to reform this UN organization, and have it follow established scientific norms. Dr. Vincent Gray who refused to endorse this reform effort, said: “*The IPCC is fundamentally corrupt. The only 'reform' I could envisage would be its abolition*” (Solomon, 2007). This agrees with my diagnosis of IPCC: “*The disease seems to be persistent*” (Jaworowski, 2004).

The name of IPCC, Intergovernmental Panel on Climate Change, tacitly suggests that only now the climate changes. This notion, in various forms (for example “*climate change is now upon us*”(CCSP-USP, 2008) is repeated *ad nauseam* in the names of institutions, programs, scientific papers and media. This, however, is not true. Without human intervention and without influence of CO₂, climate was changing constantly over the past several billion years, sometimes much more and much faster than now. The rapidity with which the Modern Warm Period appeared is often invoked as a proof of its human cause. However, the Dansgaard-Oeschger events (D-Os), with their extremely rapid changes of climate, occurred without human

⁷ Professor Paul Reiter is a member of the WHO Expert Advisory Committee on Vector Biology and Control, found himself “at loggerhead with persons who insisted on authoritative statements, although they had little or no knowledge of his specialty” (Wikipedia). At a hearing in the United States Senate he commented an abuse of public by IPCC: “A galling aspect of the debate is that this spurious 'science' is endorsed in the public forum by influential panels of 'experts.' I refer particularly to the Intergovernmental Panel on Climate Change. Every five years, this UN-based organization publishes a 'consensus of the world's top scientists' on all aspects of climate change. Quite apart from the dubious process by which these scientists are selected, such consensus is the stuff of politics, not of science. Science proceeds by observation, hypothesis and experiment. The complexity of this process, and the uncertainties involved, are a major obstacle to a meaningful understanding of scientific issues by non-scientists. In reality, a genuine concern for mankind and the environment demands the inquiry, accuracy and scepticism that are intrinsic to authentic science. A public that is unaware of this is vulnerable to abuse.” Reiter P. (2006) Malaria in the debate on climate change and mosquito-borne disease. <http://commerce.senate.gov/pdf/reiter-042606.pdf>.

intervention about 20 times during the past 100,000 years. The last of them, the so called “Younger Dryas”, happened 12,800 years ago, when the warm climate switched rapidly to a cold one, and then after 1300 years, almost immediately returned back into warm phase. Both times the switching took just a few years, much less than the recovery from the Little Ice Age after 1900 AD, which “*is now upon us*”.

Proofs of human causation of the Modern Warm Period

The most important argument of IPCC report (IPCC-AR4, 2007) for man-made climate warming is based on climatic models combined with observations of temperature in the period 1906 – 2005 over the five continents and the whole globe. Not quite correct observations (Gray, 2008), and not quite reliable models (NIPCC, 2008), however. Here I will mention only observations from North America, where according to IPCC the highest temperature was measured in 2005, whereas in reality the highest temperature in the USA occurred in 1934 (GISS, 2007).

Figure SPM.4 in Summary for Policymakers of IPCC-AR4 report (<http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf>) shows the surface temperature in North America higher in 2000 than in 1934 by 0.44°C. However, the corrected GISS data show the opposite: the 1934 temperature was in the United States higher than in 2000 by 0.774°C (GISS, 2007). According to IPCC figure SPM.4 between 1975 and 2000 temperature in North America increased by 0.884°C. However, an advanced statistical analysis of annual temperature data from a homogenous U.S. – Canadian network of 120 radiosonde stations, covering latitude bands extending from 20°N to 80°N (Angell, 1999), showed that in 1975 – 1995, a temperature trend in North America that was not significantly different from zero at 95% level of confidence (Watkins, 2008).

The figure SPM.4 is essential for the IPCC “fingerprint argument” that the Modern Warm Period is caused by human activities, particularly by the burning of fossil fuels. The argument is that computer models using only natural climatic factors, “*such as volcanic activity and variations in solar [radiative] output*”, are unable to simulate the past temperature trends, but “*When the effects of increasing levels of greenhouse gases are included in the models, as well as (natural) climatic factors, the models produce good simulations of the warming that occurred over the past century*” (IPCC-AR4, 2007).

This is, however not true. Using all the anthropogenic and natural factors, listed in Figure SPM.2 in IPCC-AR4 report, the models are unable to correctly match the real warming trends with altitude (Figures 6 and 7).

Figure 6. Greenhouse-model-predicted temperature trends versus latitude and altitude. Note the increased temperature trends in the tropical mid-troposphere (~10 km). This figure is from a report issued by the U.S. Climate Change Science Program (CCSP) in April 2006, which is similar to analogous figure in Chapter 9, page 675 of (IPCC-AR4, 2007). After (NIPCC, 2008).

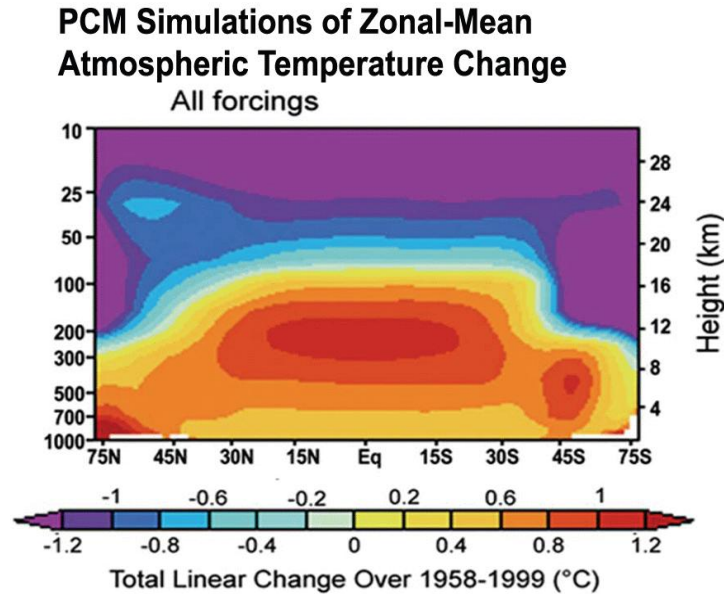
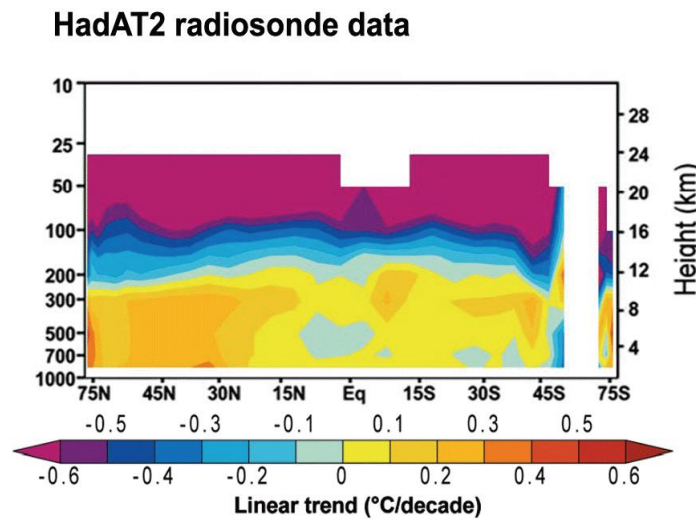


Figure 7. Measured temperature trends versus latitude and altitude, based on balloon data. Note the absence of increased temperature trends in the tropical mid-atmosphere. This figure published in CCSP report of 2006 was not presented for comparison in (IPCC-AR4, 2007). After (NIPCC, 2008).



Greenhouse models predicted about two times higher temperature at 10 km than at the surface (Figure 6), while the balloon measurements gave the opposite result: no increasing of warming, but rather cooling with altitude in the tropical zone (Figure 7).

There are two errors in the IPCC “fingerprint argument”: (1) limiting natural factors only to solar irradiance, and ignoring other cosmic factors; and (2) incorrectly assuming, on the basis of unreliable ice core studies, and after rejecting a large body of direct measurements of CO₂ in the 19th and most of the 20th century atmosphere, that during the past 650,000 years the natural concentration of atmospheric CO₂ never exceeded the concentration of 180 to 300 ppm (parts per million), that the pre-industrial value was about 280 ppm, and that human activity increased it to about 380 ppm, i.e. by about 36%.

To fit these data into a global carbon cycle IPCC assumed a speculative lifetime for man-made CO₂ in the atmosphere as 50 to 200 years, ignoring observational evidence from 37 studies (based on natural and nuclear bomb carbon-14, Suess effect, radon-222, solubility data and carbon-13/carbon-12 mass balance) documenting that the real lifetime is about 5 years⁸. With CO₂ atmospheric lifetime of about 5 years the maximum amount of man-made CO₂ remaining now in the atmosphere is only 4%, and not 36% (see review in (Segalstad, 1998).

The annual fluxes into the atmosphere of man-made CO₂ are in Table 1 compared with those from natural sources. As discussed above the current 4.7% anthropogenic fraction of the total CO₂ flux contributes probably about 0.15% to the total planetary greenhouse effect.

Table 1. Annual fluxes of CO₂ into global atmosphere (gigatonnes of carbon = 10¹⁵ g C). After (Jaworowski, 2007a)

NATURAL	170
MAN-MADE	
fossil fuels, cement production, land use	6.73
cars	0.57
human respiration	0.65
TOTAL	7.95 = 4.7% of NATURAL

⁸ CO₂ atmospheric lifetime of 5 years was determined in 1959 by Bert Bolin. Apparently he forgot it three decades later, as the first chairman of IPCC (1988-1998).

Ignoring cosmic rays

IPCC-AR4 limited the natural “radiation forcing”⁹ to only one factor (solar irradiance), and based its estimates on ten anthropogenic factors, listed in Summary for Policymakers in Figure SPM.2. The IPCC regards the anthropogenic CO₂ emission as the most important factor, and assumed it to be 13.8 times more powerful than the solar irradiance. This figure propagates an idea that human-made emission of CO₂, not nature, rules the climate. But the glaciological studies clearly demonstrated that it is climate that influences the atmospheric CO₂ level, and not *vice versa*. Over the past several hundred thousand years increases of temperature always preceded the CO₂ concentration increases; also climatic cooling always preceded decreases of CO₂ (Caillon et al., 2003; Fischer et al., 1999; Idso, 1988; Indermuhle et al., 1999; Monnin et al., 2001; Mudelsee, 2001). Also the CO₂ measurements in the 19th and 20th atmosphere show that CO₂ changes lag the temperature. Multi-decadal heating of the oceanic CO₂ absorption area of the Northern Atlantic Ocean was followed by around a 5-year lag in increase of the atmospheric CO₂ concentrations to about 400ppm in the 1930s, and to about 360ppm today (Beck, 2008). This suggests that changes of temperature of the atmosphere are the causative factor for CO₂ changes, probably by influencing the rate of land erosion, and the solubility of gas in oceanic waters (lower in warm than in cold water). In its almost monothematic concentration on greenhouse gases, especially on CO₂, IPCC underestimated water vapor - the main greenhouse gas contributing about 95% to the global greenhouse effect (Ellingson et al., 1991; Lindzen, 1991). About 95% of the total annual emission of CO₂ into the atmosphere is natural and comes from the land and sea, and only 5% from human sources. According to isotopic mass balance (¹³C/¹²C) calculations, the mass of all past fossil CO₂ remaining the atmosphere is around 4%, corresponding to an atmospheric concentration of 14 ppm (Segalstad, 1996; Segalstad, 1998; Segalstad and Jaworowski, 1991), almost 10 times less than assumed by IPCC. Thus the anthropogenic CO₂ contributes only a tiny fraction to the total greenhouse effect, probably less than 0.15%.

The IPCC ignores a dominating climatic effect of incoming cosmic rays governed by solar activity, well known for 17 years (Friis-Christensen and Lassen, 1991). Recent studies demonstrate that the climate of the Earth is completely determined by the Sun, *via* insolation and action of galactic cosmic rays, and that the so-called anthropogenic “CO₂ doubling” problem is practically absent (Rusov et al., 2008). In opposition to the IPCC message, the natural forces that are driving the climate are 4 to 5 orders of magnitude greater than the corresponding anthropogenic impact, and humans may be responsible for less than 0.01°C of warming during the last century (Khilyuk and Chilingar, 2006). The cosmoclimatologic studies demonstrate a

⁹ Change in difference between the incoming radiation energy and the outgoing radiation energy.

powerful influence on climate of fluctuations of muon fraction of cosmic rays, caused by short-term variations of Sun's activity (Svensmark, 2007; Svensmark and Calder, 2008) (Figure 8), and in geological time scale by migration of the Solar System trough spiral arms of the Milky Way, with different concentration of dust and activity of novas (Shaviv and Veizer, 2003) (Figure 9). In the 20th century the reduction of cosmic rays was such that the maximal fluxes towards the end of the century were similar to the minima seen around 1900 (Figure 10). Decreasing cosmic-ray flux, caused a decrease of low cloud cover (Figure 8), and resulted in warming the Earth.

Figure 8. A close correspondence between monthly variations of global low-cloud cover at <3.2 km altitude (blue), and cosmic-ray counts at the Huancayo station (red), 1982-2005. After(Svensmark, 2007).

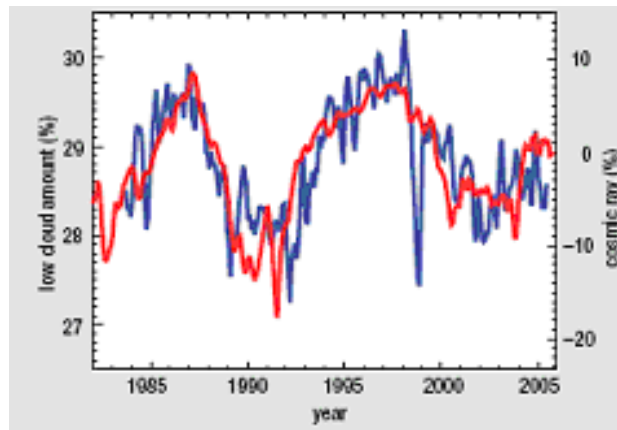


Figure 9. Four switches from warm “hothouse” to cold “icehouse” conditions during the past 542 million years. Red curve represents tropical sea-surface temperatures (in K degrees), and blue curve the cosmic-ray flux. Both correspond with four encounters with spiral arms of the Milky Way. After (Svensmark, 2007) and (Shaviv and Veizer, 2003).

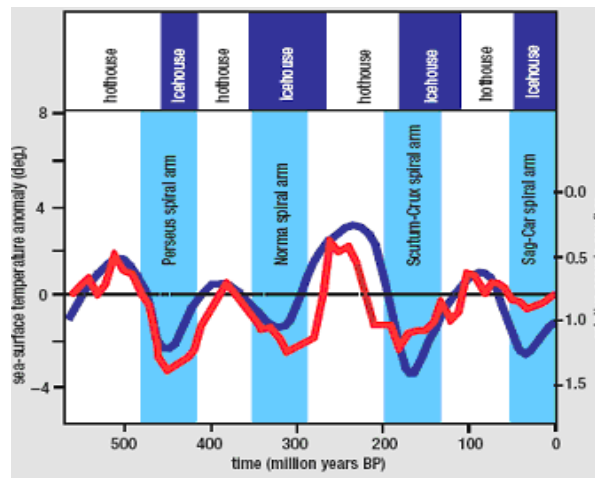
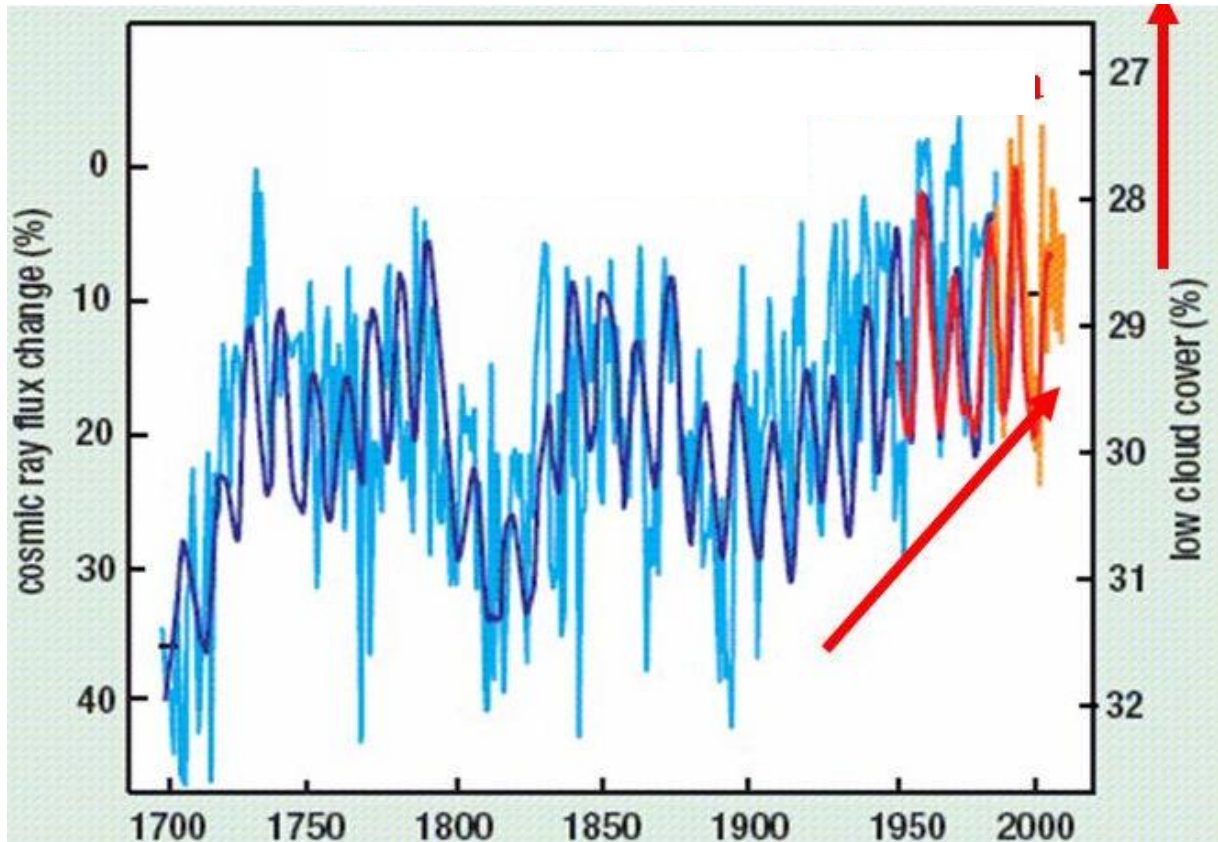


Figure 10. Galactic cosmic ray flux estimated from two proxies since 1700 (blue and light blue), and also directly measured in 1953 – 2004 (red), and low clouds cover (orange). Note that both Y scales are inverted. After (Svensmark, 2007).



Low-level clouds cover more than 25% of the Earth surface and exert a strong cooling at the surface. The change in radiative forcing by 3% change in low cloud cover over one solar cycle (Figure 8 blue line) will vary the input of heat to the Earth surface by about 2Wm^{-2} . It can be compared with 1.4Wm^{-2} estimated by the IPCC for the greenhouse effect of all human-made CO_2 added to atmosphere since the Industrial Revolution (Svensmark, 2007). The low cloud formation depending on fluctuations of cosmic rays, ignored by IPCC, is a much more plausible cause of the Modern Warming Period than CO_2 concentration changes. As was always in the past, also now CO_2 change lags the temperature. Not a single publication on cosmoclimatologic effects was cited in the IPCC report. This disqualifies them as impartial and a reliable source of information for policymakers and scientific community.

Proxy ice data instead of atmospheric CO₂

The foundation of the hypothesis that the Modern Warm Period is induced by humans is an assumption that the pre-industrial level of CO₂ was 280ppm, i.e. about 100ppm lower than now. British engineer, G.S Callendar may be truly regarded as the father of this hypothesis, and of this assumption (Callendar, 1938; Callendar, 1940; Callendar, 1949; Callendar, 1958). This assumption was made possible by the arbitrary rejection of more than 90,000 technically excellent, direct measurements of CO₂ in the atmosphere, carried out in America, Asia and Europe, during 149 years between 1812 and 1961. Some of these direct measurements were carried out by Nobel Prize winners. Callendar rejected more than 69% from a set of 19th century CO₂ measurements ranging from 250 to 550ppm (Figure 11).

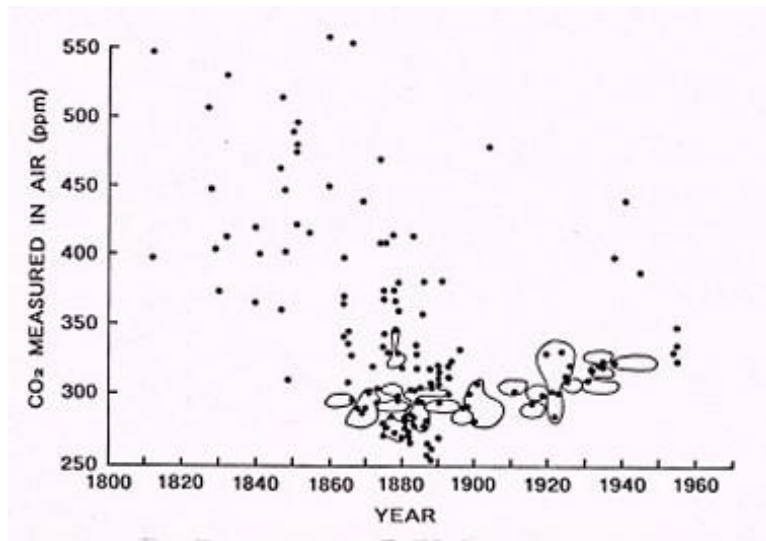


Figure 11. Average atmospheric CO₂ concentrations measured in the 19th and 20th century. Encircled are the values used by Callendar, the rest was rejected. Redrawn after (Fonselius et al., 1956)

From a set of 26 19th century averages, ranging from 250 to 550ppm Callendar rejected 16 averages that were higher than 292ppm, and only two that were lower. On the other hand, from the 20th century set Callendar rejected 3 averages that were lower than his global average of 317ppm, and none that was higher. This shows a bias in the selection method. Without such selection the 19th century data compiled by Callendar averaged 335ppm (Slocum, 1955). Similar biased selections were later applied in ice core studies of greenhouse gases (Jaworowski, 1994).

However, a recent meticulous study by Ernst-Georg Beck of more than 90,000 direct measurements of CO₂ in the atmosphere from the period 1812 and 1961 demonstrated that the 5-year average CO₂ concentrations fluctuated widely, with a minimum of 290ppm in 1885, and peaking up to 440ppm around 1820, to about 390ppm around 1855, and to about 440ppmv around 1940 (Beck, 2007) (Figure 12). These CO₂ fluctuations are in agreement with temperature trends in five Antarctic regions, reconstructed from ice core stable isotope records between 1800 and 1999 (Schneider et al., 2006) (Figure 13), and also with the HadCRUT3 2006 data on global surface temperature (Beck, 2008).

The direct CO₂ measurements in the 19th century and the first half of 20th century atmosphere completely disagree with the proxy CO₂ data from the ice cores collected at the Siple site, Antarctica (Figure 12) (see discussion below on “CO₂ hockey curves”).

Figure 12. Direct chemical (blue line) and infrared (Mauna Loa after 1958) atmospheric CO₂ measurements in the 19th and 20th century, compared with proxy ice core data (magenta line). After (Beck, 2007).

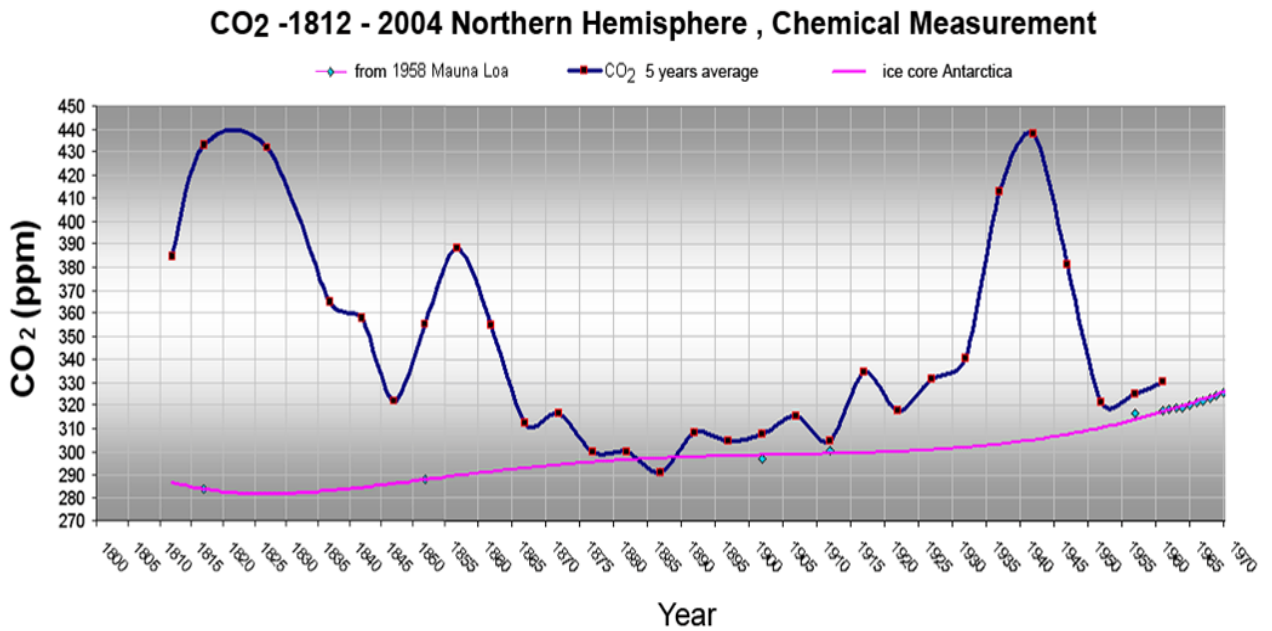
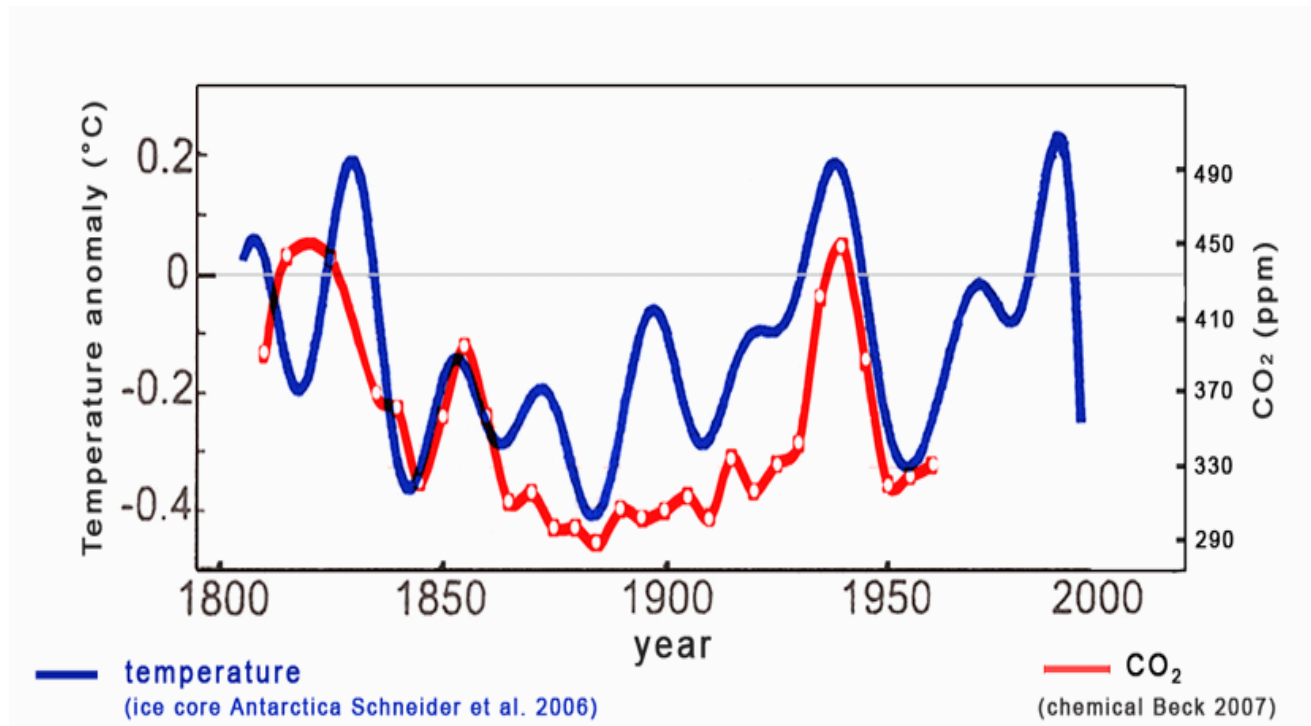


Figure 13. Surface temperature in Antarctica and CO₂ concentration in the 19th and 20th century atmosphere of Northern Hemisphere. After (Jaworowski, 2007b); temperature adapted from (Schneider et al., 2006).



The ice core proxy CO₂ data disagree also with other proxy CO₂ determinations for the past 10,000 years based on leaf stomata (Figure 14). The stomata estimates fluctuated up to 459ppm, (Kurschner et al., 1996; Royer et al., 2001; Wagner et al., 1999; Wagner et al., 2002), i.e. similarly as the direct chemical CO₂ measurements in the 19th and 20th century atmosphere.

The low, flat CO₂ ice-core concentrations, never reaching above 300 ppm during the past 650,000 years and six interglacials (Siegenthaler et al., 2005), even in periods when the global temperature was much warmer than now, suggest that either atmospheric CO₂ has no discernible influence on the climate, or that the proxy ice core reconstructions of the chemical composition of the ancient atmosphere are false – both propositions are probably true. The very long-term ice core data combined with more recent 19th century ones, and with direct atmospheric measurements (since 1958) (Figure 15), are widely used for propagating the idea of man-made global warming.

Figure 14. Atmospheric concentrations of CO₂ between 6800 and 8700 B.P. estimated from stomata of fossil birch leaves from Denmark (right line), and from ice core from Taylor Dome, Antarctica (left line). After (Wagner et al., 2002).

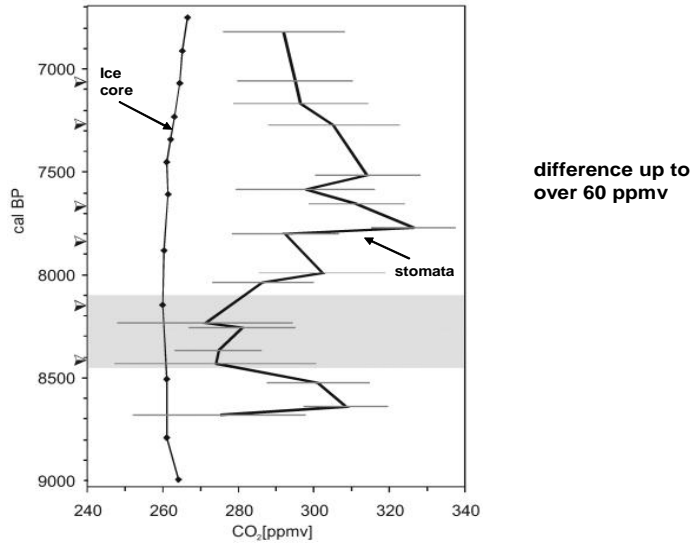
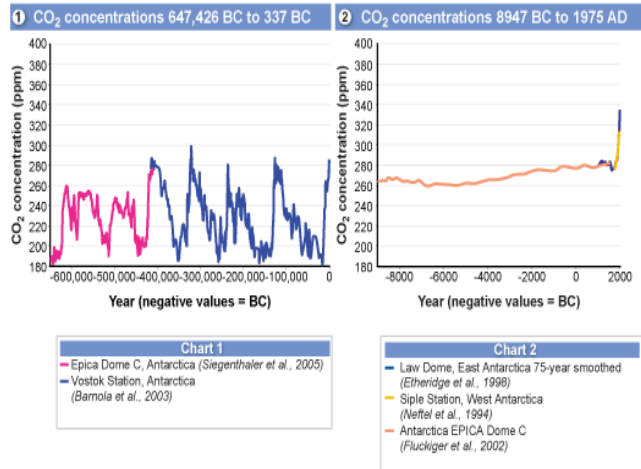


Figure 15. Proxy concentrations of CO₂ estimated from ice cores between 649,436 and 33 years BP. In the right figure note a steep CO₂ increase ascribed to 1975 by arbitrary change of age of sampled gas – see discussion below. After (EPA, 2007)



Ice core foundation of greenhouse warming

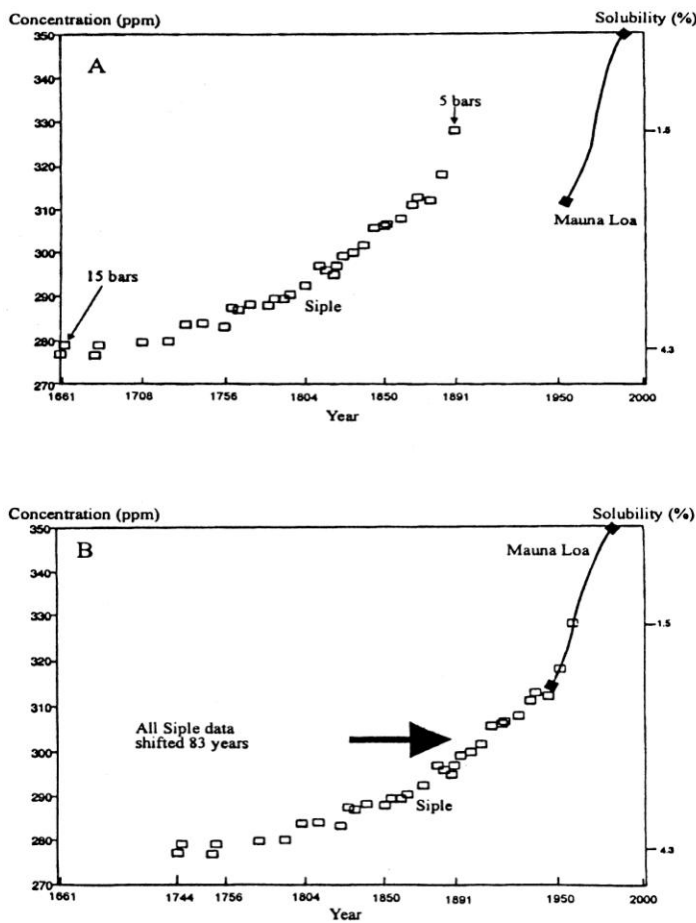
The proxy estimates of the past CO₂ atmospheric concentrations, based on analysis of air bubbles recovered from ice deposited in the 17th, 18th and 19th centuries at the ice caps of Greenland and Antarctic, are regarded as a strongest proof that humans increased CO₂ content in the atmosphere, causing the Modern Warm Period. However, polar ice is an improper matrix for reconstruction of the chemical composition of the pre-industrial and ancient atmosphere. No efforts to improve the analytic excellence of CO₂ determinations can change this situation. It is deeply improper that before experimental checking whether the ice is or is not a correct matrix for such a reconstruction, hundreds of glaciologists spent decades studying CO₂ in ice, and helped to create a widely accepted false dogma on man-made global warming. Until now such a scrutiny was not done. A project on such experimental study in Norway was dumped before it started in 1994, because it was defined as “immoral” by a high rank governmental bureaucrat (see Chapter 7 in: (Solomon, 2008).

Ice and the ice cores do not fulfill the essential closed-system criteria, indispensable for reliable estimate of the past CO₂ levels. One of them is a lack of liquid water in ice. This criterion is not met, as there is ample evidence that even the coldest Antarctic ice contains liquid water, in which the solubility of CO₂ is about 73 times, and 26 times higher than that of N₂ and O₂, respectively. This dramatically changes the chemical composition of the gas inclusions in polar ice in comparison to atmospheric air. More than 20 physical and chemical processes, mostly related to the presence of liquid water, contribute to the alteration of the original air in gas inclusions (see review in (Jaworowski et al., 1992). One of these processes is the formation of clathrates (gas hydrates), solid crystals formed at high pressure by interaction of gas with water molecules. In the ice sheets, CO₂, O₂, and N₂ start to form clathrates at about 5 bars, 75 bars, and 100 bars, respectively. Due to this process, CO₂ starts to leave air bubbles at a depth of about 200meters, and the air bubbles themselves disappear completely at a depth of about 1000meters.

Drilling, which is an extremely brutal procedure, decompresses the ice cores, in which the solid clathrates decompose back into gas form, exploding in the process as if they were microscopic grenades. In the decompressed bubble-free ice the explosions form new gas cavities and mini-cracks. The ice cores, however, are earlier exposed to a coarser cracking by vibration in drilling barrel, and by the sheeting phenomenon at the bottom of the borehole, induced by pressure difference between the drilling fluid and the ice. The cracks open the gate to extreme pollution of the inside of ice cores with heavy metals from drilling fluid, thousands of times higher than their levels in surface snow (Boutron et al., 1990; Boutron et al., 1987), and for the escape of gas inclusions.

Glaciological CO₂ records are strongly influenced by natural processes in the ice sheets and man-made artifacts in the ice cores, which lead to the depletion of CO₂ by 30% to 50%, probably mostly in the upper layers of the ice sheets. These records are also beset with arbitrary selection of data, experimentally unfounded assumptions on gas age, one-sided interpretations ascribing the observed trends to human factors, and ignoring other explanations. A classic example of such manipulation of ice core data is Figure 16, presenting the famous Siple curve, the mother of many other “CO₂ hockey curves”.

Figure 16. Mother of all “CO₂ hockey curves”. CO₂ concentration in air bubbles from pre-industrial ice from Siple Station, Antarctica (open squares), and in 1958-1986 atmospheric air collected near the top of Mauna Loa active, CO₂ emitting, volcano, Hawaii (solid line). In A, the original Siple data are shown without assuming the 83-year-younger age of air than the age of the enclosing ice (Jaworowski, 1994). In B, the same data are shown after an arbitrary “correction” of the age of air as published by (Neftel et al., 1985) and (Friedli et al., 1986).



The problem with Siple data is that the CO₂ concentration found in this locality in pre-industrial ice from a depth of 68 meters (i.e. above the depth of clathrate formation) was “too high” to fit the man-made warming hypothesis. In this ice deposited in 1890 AD, the CO₂ concentration was 328ppmv, not about 290ppmv, as needed by the hypothesis. The CO₂ atmospheric concentration of about 328ppmv was measured at Mauna Loa, Hawaii in 1973 (Boden et al., 1990), i.e. 83 years after the ice was deposited at Siple. Instead of rejecting the assumption on low pre-industrial concentration of CO₂ in the atmosphere, the glaciologists found a “solution”.

An *ad hoc* speculative assumption, not supported by any factual evidence solved the problem: the average age of air was arbitrary decreed to be exactly 83 years younger than the ice in which it was trapped (Jaworowski, 1994a; Jaworowski et al., 1992). The “corrected” ice data were made to smoothly overlay the recent Mauna Loa record (figure B below), and then were reproduced in countless publications as a famous “Siple curve”. Eight years after first publication of the Siple curve, and a year after its criticism (Jaworowski et al., 1992), glaciologists attempted to prove experimentally the “age assumption” (Schwander et al., 1993), but they failed (Jaworowski, 1994a). Similar manipulation of data was applied also to ice cores from other polar sites, to make the “CO₂ hockey curves” covering the past 1000 and even 400,000 years (IPCC, 2001; Wolff, 2003). For some of these curves much longer air/ice age difference was arbitrarily assumed, without any experimental support, reaching up to 5,500 years. The apparent aim of these manipulations, and of ignoring other proxy CO₂ determinations and of some 90,000 direct determinations in the pre-industrial and 20th century atmosphere, was to induce in the public a false conviction that the 20th century level of CO₂ was unprecedented over the past hundreds thousand years.

The “CO₂ hockey curves” were used as an “*indicator of human influence on the atmosphere during the Industrial Era*” (IPCC, 2001) (IPCC-AR4, 2007). Also in the report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research these curves are used as an evidence of “*human influences*” and “*fingerprint*” and to argue that the “*observed (current) warming could not have been caused by natural forces alone*” (CCSP-USP, 2008). In fact this is the only proof of human causation of the Modern Warm Period presented in the Report. This proof is false.

Final Thought

Figure 16 demonstrates an unacceptable distortion of science. During the past 16 years I presented it in many publications, together with data demonstrating that polar ice does not fulfill the close-system criteria, essential for reconstruction of the chemical composition of the ancient atmosphere. This had practically no effect on a worldwide acceptance of the false, ice core based, dogma on human causation of the Modern Warm Period. The recent climatic cooling might perhaps open the ears of public and decision makers to what astronomers have been saying for some years: *our Sun enters a long period of slumber, cooling the Earth and its fellow planets*. We cannot enhance it with Kyoto or stop it otherwise. But we can adjust.

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