GLOBAL WARMING

THE IPCC vs THE FACTS

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Hello, my name is Ken Wilson.

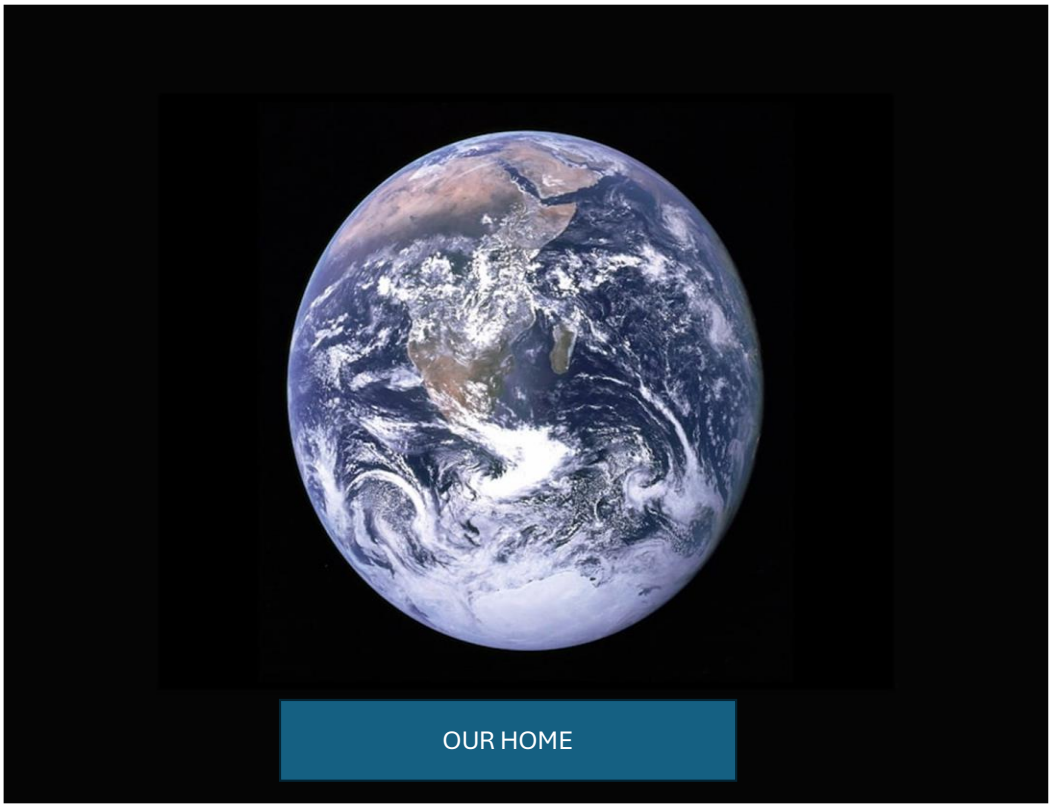
I am a retired water resources engineer.

I live in Victoria, British Columbia.

I have followed the work of the Intergovernmental Panel on Climate Change (IPCC) for many years.

I hope this video, THE IPCC vs THE FACTS, will give you a better appreciation of the natural forces that have driven climate change in the past and of how these same natural forces are still playing a role in climate change today.

The video will also examine some effects that our species is having on climate change today.



Our Home – There is no other planet like it.

It is a wonderful place. Can we preserve it?

The present drive to adopt green energy measures and achieve the Net Zero 2050 goal poses major economic, environmental, technical, and political challenges to all nations in the immediate future.

I am not going to go into details of these various issues today. Instead, I want to focus on the key claim by the Intergovernmental Panel on Climate Change (the IPCC) and its supporters that our species has become a threat to the sustainability of life on our Planet.

This video will deal with the behavior of the earth, the behavior of climate, and the behavior of our species.

The presentation is in three parts.

The first will deal with climate in the past, the second, with climate in the present, and the third is a Postscript, listing some of the major shortcomings of the IPCC's Executive Panel.

THE IPCC vs THE FACTS

In 2021, the IPCC Executive Panel released its AR6 Special Report for Policymakers (SPM). Antonio Guterres, the Secretary General of the United Nations, warned that the report was:

"...a code red for humanity. The alarm bells are deafening, and the evidence is irrefutable: greenhouse -gas emissions from fossil -fuel burning and deforestation are choking our planet and putting billions of people at immediate risk."

The IPCC is the United Nations body for assessing the science related to climate change.

/The IPCC was created in 1988.

/It issues Summary Reports for Policymakers (SPMs) every 5 to 6 years.

IS THIS TRUE?

Or, has the West talked itself into a climate hysteria that is being sustained by excessive green energy funding and by the flawed assumptions and flawed analyses of the IPCC's computer modeling studies?

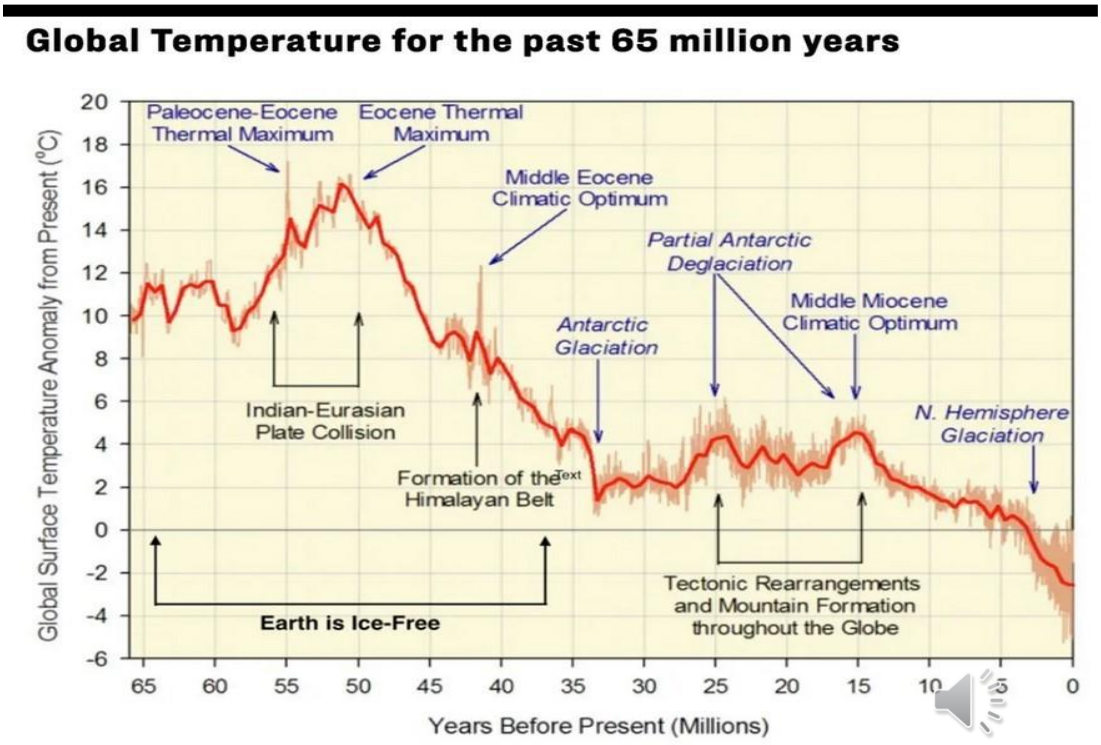


Fig. 1 The String of Events Leading to the Most Recent Ice Age (Dr. Moore) [1]

Our Planet is a giant heat engine fueled by radioactive decay.[2] The mantle below the earth's crust is a semi-solid material that convects heat outward from the earth's core to the earth's surface.

It causes the tectonic plates that the continents are embedded in, to drift. Sometimes the plates collide. Sometimes they divide in two. Sometimes the moving tectonic plates cause earthquakes, volcanoes, and mountain building.

The Eocene Maximum 52 mya was one of the warmest periods on the Planet in the last 600 myr.

At the Eocene Maximum, the earth was ice free.

The Indian tectonic plate was beginning to collide with the Eurasian tectonic plate.

About 47 mya South America began to separate from the Antarctic, opening Drake's Passage, allowing strong, cold circumpolar air and ocean currents to develop around the Antarctic.

The Antarctic has the highest average elevation of all the continents[3].

About 42 mya, the Indian Plate, which was thrusting under the Eurasian Plate, began to create the Himalayan Mountain Belt.

This produced the Monsoon conditions south of the Himalayas, and the arid plains north of the Himalayas that still exist today.

About 33 mya, glaciation began in the Antarctic.

Between 25 and 15 mya, tectonic plate rearrangements and mountain formation were prevalent.

About 3 mya, the Isthmus of Panama was formed, connecting North America and South America. This cut off the warm equatorial current between the Pacific and Atlantic oceans.

This led to the creation of the Gulf Stream, which today keeps northwest Europe as much as 15-20° C warmer in winter than it otherwise would be.[4]

Also, about 3 mya, the Alaska mountain range rose, reducing the flow of mild Pacific air into northern Canada.[4]

About 2 ½ mya, glaciation began in northern Canada.

At the last Ice Age Maximum 21 kya, the earth experienced some of its lowest temperatures in the last 600 myr.

In summary, the location of continents and mountain ranges can be major influences on how air currents and ocean currents distribute the excess heat absorbed from the sun in the tropics to the polar regions. This affects both regional climates and global temperatures.

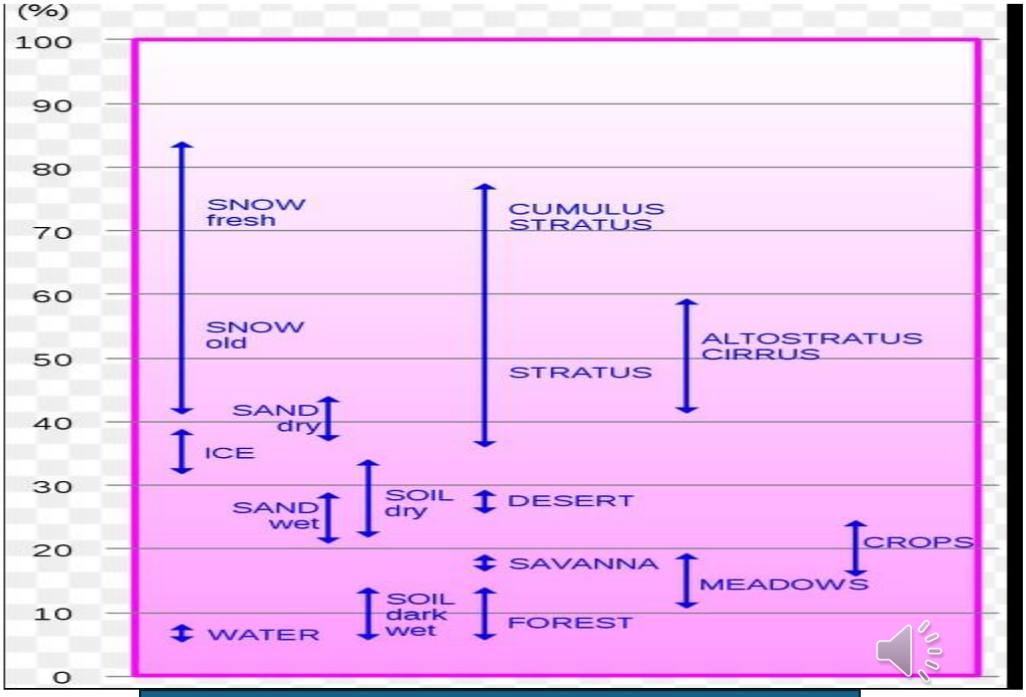


Fig. 2 Albedo of Different Surfaces[6]

Although the interior of the earth is very hot, the earth without greenhouse gases would have a surface temperature of about -18^0 C.[7]

There would be no life on the planet. With greenhouse gases, the average surface temperature is about 15^0 C.

The temperature on the surface of the earth is largely dependent on the amount of radiated energy that is absorbed by the earth daily from the sun.

Albedo is a measure of the reflectiveness of different surfaces on earth to incoming radiation from the sun.

Water dark soil and forests can absorb a lot of incoming radiation from the sun. This warms the earth. These surfaces have low Albedos.

Ice, snow, and clouds can reflect a lot of incoming radiation back into space without it ever warming the earth. They have high Albedos.

When a new ice age advance begins, glaciers and ice sheets begin to grow in size. Their local Albedos become increasingly reflective . This is a positive feedback mechanism that accelerates the cooling process.

In an ice age advance, increasing cloud cover can have a similar effect.

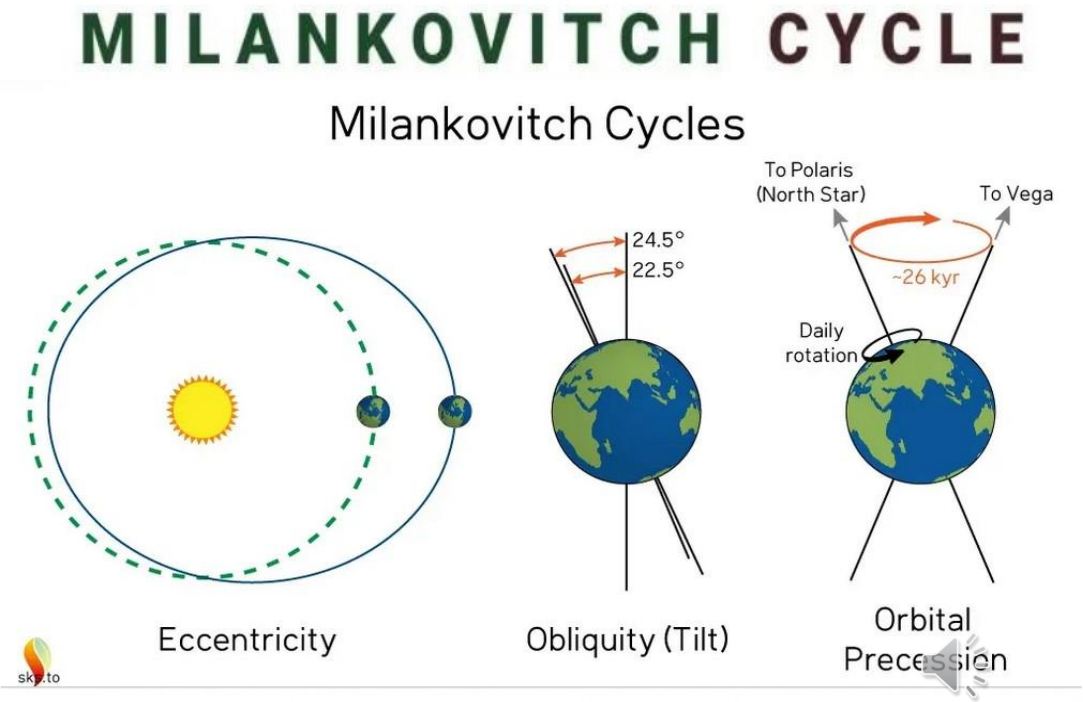


Fig. 3 Milankovitch Cycles[8]

If the summer sun cannot melt the snow from the previous winter, snow accumulates. If this continues year after year, glaciers and ice sheets begin to grow.

Our current ice age has developed in a series of ice advances and ice retreats. We have had over 50 of these cycles so far. [9]

The timing of our ice advances and retreats is determined by 3 Milankovitch Cycles which describe three different aspects of how the earth orbits the sun.

Fig. 3 shows the 3 Milankovitch Cycles.

The Eccentricity cycle on the left has a period of about 100,000 years as the earth's orbit around the sun becomes slightly more elliptical, and then slightly less elliptical.

When its orbit is at its most elliptical, the earth is closest to the sun, and it receives its maximum incoming radiation from the sun due to eccentricity.

The Tilt cycle in the center has a period of about 41 thousand years. It tracks the tilt of the earth's polar axis from a minimum value of about 22.5^0 to a maximum value of about 24.5^0.

At maximum Tilt, the northern latitudes receive their maximum incoming radiation from the sun due to tilt.

The Precession cycle on the right measures the wobble of the polar axis, and its effect on the direction of the polar axis. This determines the timing of the seasons of the year.

The Precession cycle varies between 19 thousand years and 26 thousand years.

About 21,000 years ago at our most recent Ice Age Maximum, the three Milankovitch cycles began to combine into a strong warming phase.

This meant that the earth was closest to the sun due to Eccentricity, the Tilt was close to its maximum value, and Precession caused the polar axis to be pointing directly at the sun in mid-December.

This maximized the incoming radiation from the sun reaching the northern latitudes, and it maximized the summer melting of northern glaciers and ice sheets.

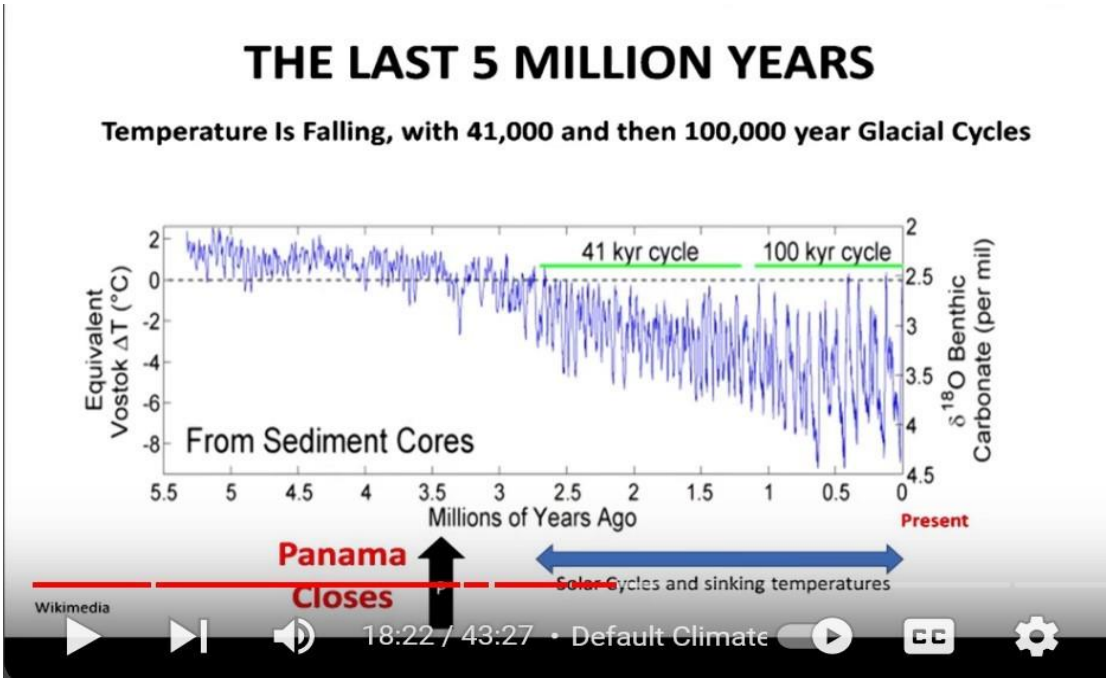


Fig.4The Last 5 Million Years

Fig. 4 shows more detail of our current ice age which started about 2½ mya. Each drop in the blue temperature graph marks an ice age advance, and each rise in temperature, an ice age retreat. In the first 1½ million years, each advance and retreat cycle lasted about 41 kyr. Tilt was the controlling factor.

In the past 1 million years, each advance and retreat cycle lasted about 100 kyr. Eccentricity was the controlling factor.

The longer cycles created more extensive and deeper ice sheets.

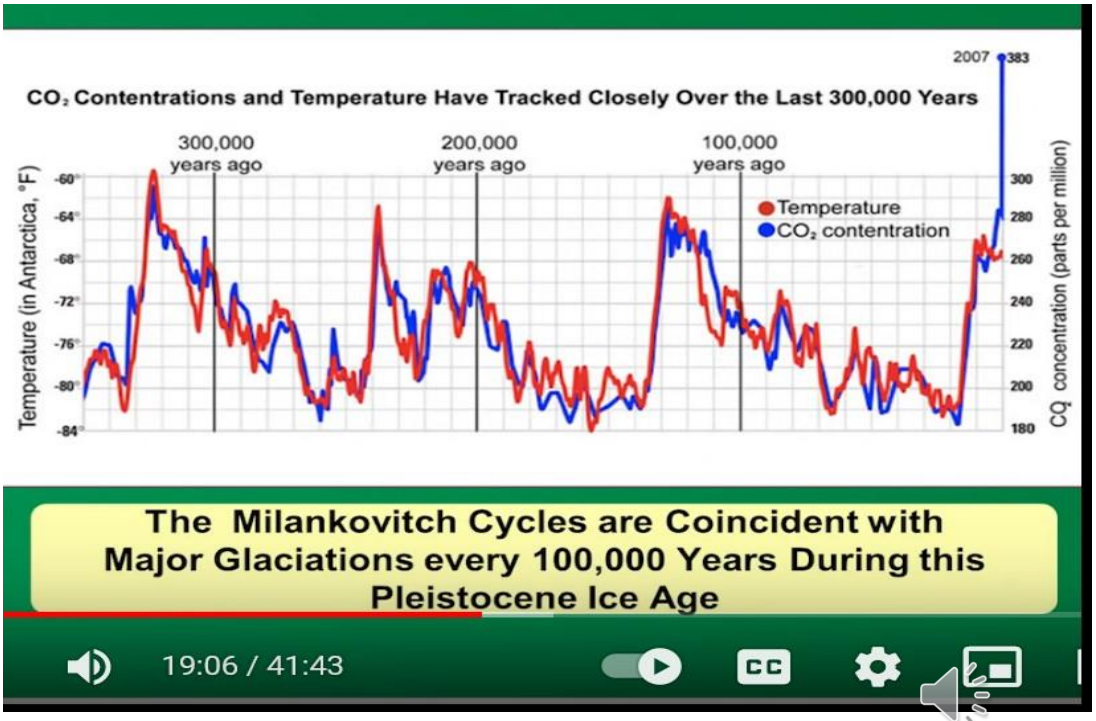


Fig. 5 The Most Recent Ice Age Advances and Retreats (Dr. P. Moore)[10]

Fig. 5 shows the last 350 kyr of our Ice Age. The red curve shows temperature. The blue curve shows CO2 concentration.

The common pattern in the past 350 kyr is for brief interglacial warm periods to be followed by about 100 kyr of declining temperatures to reach the limit of another Ice Age advance.

This is followed by a sharp rise of temperature to reach the start of another brief interglacial warm period, which in this case is the Holocene interglacial, which is the Interglacial that we are currently living in.

The preceding Eemian interglacial about 125 kya was warmer than our current Holocene.

These brief Interglacial warm periods usually last 10 to 15,000 years. Our current Holocene interglacial is about 11,000 years old.

As temperatures rose and fell over the last 350,000 years, temperature led the rise and fall of CO_2 by about 800 years.

This shows that temperature was the causative factor driving this process, not CO_2.

The temperature and CO_2 were correlated.

As temperature rose, it slowly warmed the oceans.

As the oceans began to warm, they outgassed dissolved CO_2, much as a cold glass of coke does when it is removed from a refrigerator.

Conversely, as temperature dropped, CO_2 dissolved from the atmosphere into the oceans as they become colder.

The recent rise of CO_2 to 420 ppm today is due primarily to the rapid rise in CO_2 emissions from the burning of fossil fuels.

This is something new. The CO_2 concentration has not been this high for several million years.

The temperature and CO_2 correlation pattern prior to the Holocene has been disrupted.

This raises a question: Does this sudden rise in CO_2 pose a significant threat to the future of life on our planet?

According to the IPCC Executive Panel and its supporter, the answer is yes. We already have too much CO2 in our atmosphere and we are at a significant risk of an imminent global warming apocalypse.

Before we explore this issue further, we should perhaps look first at the flip side of the question. Can we have too little CO_2 in our atmosphere, and can that be a threat to life on our Planet?

At the last Ice Age Maximum 21 kya, CO_2 concentration dropped to 182 ppm.[11] This low level of CO_2 was a definite threat to life on our planet.

If the CO_2 concentration had dropped further to 150 ppm, most photosynthesis on the planet would have shut down, and most life on the planet would have died.

We came very close to reaching that critical 150 ppm level of CO_2 21 kya.

As CO_2 was dropping toward the 182-ppm level at the last Ice Age Maximum it was already having an effect on life on this Planet.

Vegetation in the high plains of North America and Asia began to die off, producing large dust storms in the northern hemisphere.

These dust storms in the northern latitudes would begin to coat the glaciers and ice sheets with dust, thereby changing their Albedos from being reflective of incoming radiation from the sun to becoming absorptive of incoming radiation.

This change in Albedo would be a positive feedback mechanism, boosting a melting process that was already being driven by the Milankovitch cycles.

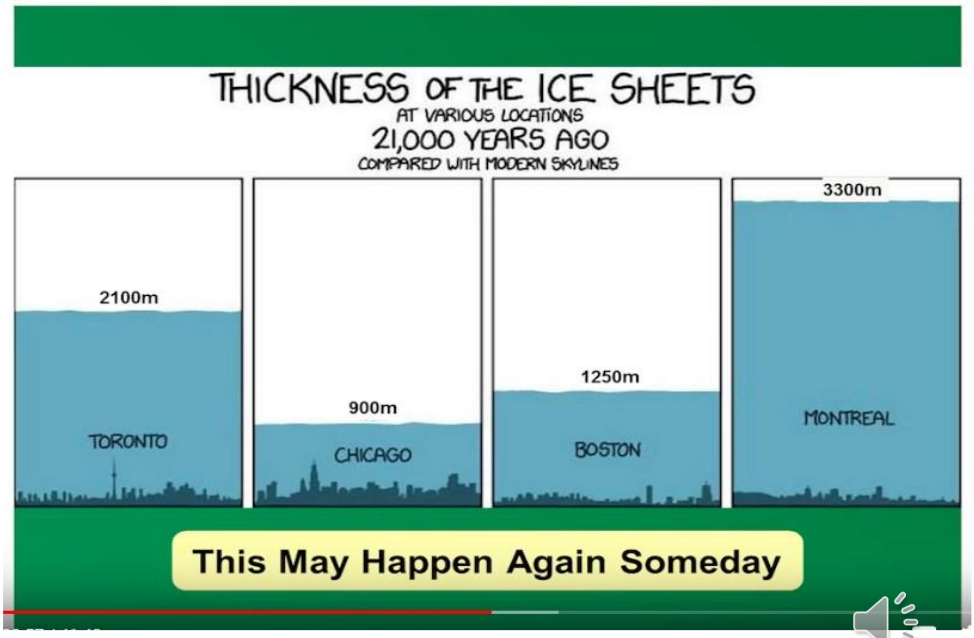


Fig. 6 What an Ice Age Maximum Looks LIke (Dr. P. Moore)[12]

Fig. 6 shows What the Ice Age Maximum looked like 21,000 years ago, The depth of the ice sheet in the Toronto area was 2.1 km.

The superimposed height of the CN tower at 1/4 of the depth of the ice sheet shows how puny man's efforts can be compared to the forces of nature.

The other cities had ice sheet depths of 0.9 km in Chicago, 1.25 km in Boston, and 3.3 km Montreal.

A similar ice sheet today would be a true climate apocalypse in the northern latitudes that would cause immense dislocation, suffering, conflict, starvation, and death.

The Laurentide ice sheet which covered these cities 21 kya stretched from Alberta to the Atlantic.

The Cordilleran ice sheet stretched from the Rockies to the west coast. It left only the highest mountains on Vancouver Island above the glaciers in the Strait of Georgia and the Strait of Juan de Fuca.

There were no forests, no salmon streams, and no people.

Similar glaciers and ice sheets covered Greenland, large areas of Europe, Asia, and the Antarctic.

The large volume water stored in the glaciers and ice sheets caused the sea level to drop about 150 metres.[13]

If all the glaciers and ice sheets remaining in the world today melted, the sea level would rise about 70 metres[14] above its present level.

These extraordinarily disruptive changes in sea level in the past were all due to the operation of natural forces, not man. These same natural forces are still in play today.

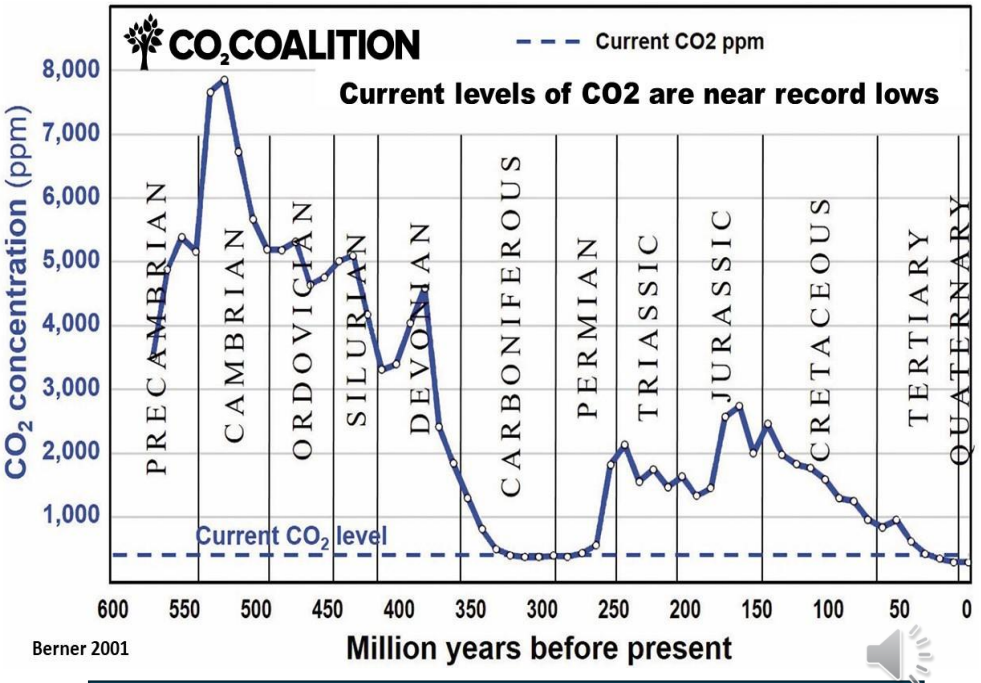


Fig.7 CO_2 Levels in the Past 600 mya [15]

The focus in Fig. 7 is on CO_2 levels over the past 600 myr. This gives us an opportunity to look for evidence of dangerously high levels of CO2 concentration that may have occurred in the past.

The dashed line across the bottom of the graph shows a recent CO_2 concentration level of 380 ppm. As was mentioned in Fig. 5, the CO_2 concentration dropped to 182 ppm, 21 kya.

300 mya, the planet was in the grip of the Karoo ice age which lasted about 90 myr.

Temperatures and CO_2 concentrations in the Karoo ice age were similar to those 21 kya, with both temperature and CO_2 being at their lowest levels in the past 600 myr.

These two ice ages represented severe temperature and CO_2 challenges to the survival of life on much of our Planet.

The Eocene Maximum at 52 mya that we looked at in Fig. 1, had one of the highest temperatures in the past 600 myr. This occurred when the CO_2 level was about 1,000 ppm.

The average CO_2 concentration over the 600 myr time period of the graph was about 2,600 ppm, or about 6 times higher than today's level.

This illustrates that there is no fixed relationship between CO_2 levels and temperature levels over long periods of time.

In the Cambrian period about 530 mya, there was an explosion of complex new life forms in the oceans. This was the first time that fossils were created that were visible to the naked eye.

The CO_2 concentration was about 7,000 ppm.

This is far above the 420-ppm concentration that we are worrying about today in terms of global warming and its potential effect on the survival of species.

With regard to the impact of CO_2 levels on humans, common CO_2 concentration in confined spaces like theaters, shopping malls and in many commercial greenhouses is about 1,200 ppm.

It is striking that these CO_2 levels are at about the same CO_2 level as was present at the Eocene Maximum when the earth was ice free.

On submarines, CO_2 scrubbers are activated to keep CO_2 concentration below 5,000 ppm.

When we are outside in open areas, we inhale CO_2 today at a concentration of 420 ppm, and we exhale CO_2 at a concentration of 40,000 ppm, i.e. a hundredfold increase.

People do not complain or show distress about the 40,000-ppm level of CO_2 in their lungs just as they are about to exhale.

These various values of CO_2 over the past 600 myr suggests that there is little reason for us to be unduly alarmed over our current CO_2 level of 420 ppm.

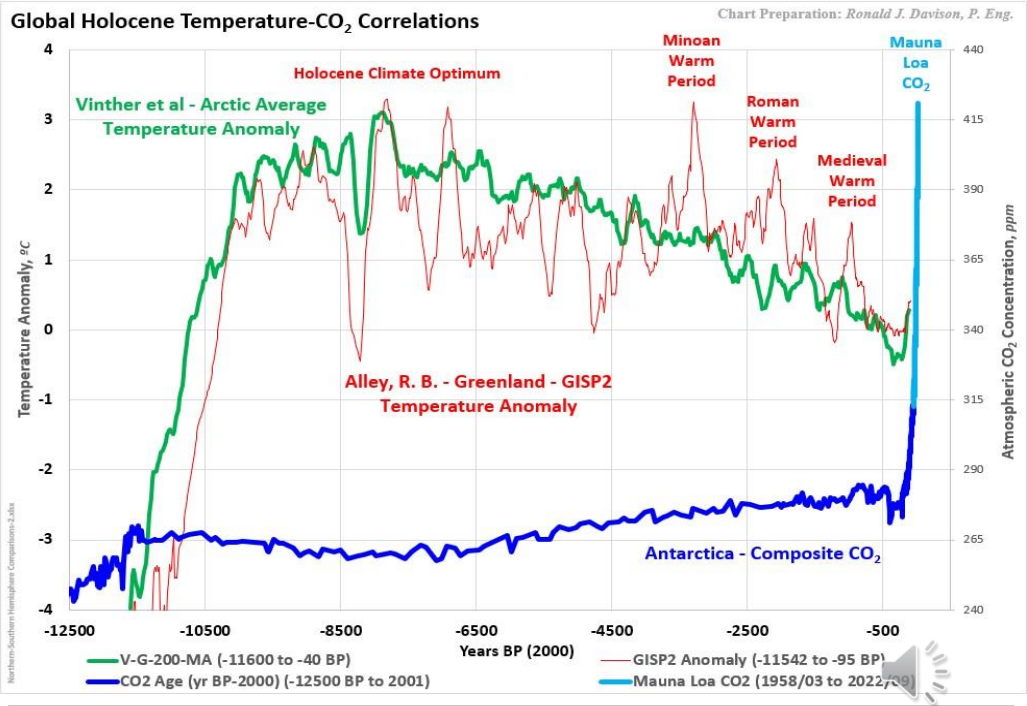


Fig. 8 A View of the Holocene Interglacial Based on Greenland and Canadian Archipelago Ice Core Data[16]

In Fig. 8, we look more closely at events in our Holocene Interglacial period.

But before we get further into climate change issues, I would like to say a few words about our species and what it has been doing during the Holocene. This can help to give us some perspective on climate issues that we are dealing with in society today.

Agriculture began about 11,000 years ago. The population of our species at that time was estimated to be about 10 million people. [16] Our forefathers were hunters and gatherers, living in small, scattered bands that survived the last Ice Age Maximum 21 kya.

The development of agriculture was a momentous step forward in human development, leading to a steadily increasing food supply and to the ability to store food over long periods of time.

By the Roman era 2,000 years ago, the population had expanded to about 300 million people.

With the improved food supply, our forefathers began to live in settled communities which became towns, cities, and nation states. They learned about the division of labour, and how to specialize in tasks, leading to better tools and to the development of cultures.

They learned how to build pyramids and aqueducts, and to establish academies to study philosophy, mathematics, and the nature of the natural world.

They had also, unfortunately, learned how to wage wars of conquest and plunder. For the losers in these wars, the prospects were often bleak, quick death or slavery.

By the 1920s, the population had reached about 2 billion people. By then, we had determined the dimensions of our world and had colonized most of it. We had learned how to exploit the energy in fossil fuels and to create an industrial revolution that led to a rapid increase in the standard of living in the industrialized countries.

We had learned how to fly. And, we had already experienced our first World War, which drastically affected the lives of millions of people and the collapse of empires.

Today, our population is about 8 billion people. We have gone to the Moon, and we have developed an enormous body of knowledge about ourselves, our Planet, the Solar System and Space.

We have also had our second World War and have learned how to build and deliver hydrogen bombs.

It is clear that we still have many flaws, but overall, we are a remarkable species.

On a Geological time scale, 11,000 years is only the blink of an eye. But within that period, we have gone from being an insignificant species to being the dominant species influencing events on the planet.

We have gone from developing a rudimentary agriculture 11,000 years ago to developing ChatGPT Artificial Intelligence today.

It is an extraordinary accomplishment.

Population growth and climate change are tightly intertwined divisive issues at this time.

One noteworthy development is that in all countries that have industrialized and have raised their standard of living, they now have birth rates by their native populations that are below replacement levels, and sometimes by a significant margin.

All countries that have successfully industrialized have had ready access to reliable and affordable fossil fuel supplies.

All countries that wish to retain high standards of living in the future must continue to have ready access to reliable and affordable energy resources.

This suggests that perhaps the most humane way to stabilize the world's growing population and deal with the problems that it engenders is to rapidly raise the standard of living in all developing countries.

This requires that all these developing countries must find ways to get ready access to reliable and affordable energy resources.

Current green energy technology, however, is not reliable and cannot meet the energy needs for developing countries wishing to develop modern industrial economies for their citizens now, or in the foreseeable future.

And, therein, lies one of the major dilemmas that is confronting our species today. This is at the heart of political debate that is underway over climate change issues and the desire of billions of people in the developing world who are seeking a better standard of living than they presently have.

We will return later to further examine this question and its implications.

And now, back to climate change to see what further insights we can gain into whether, or not, the planet is at risk of a climate crisis from rising CO2 emissions.

At the Holocene Climate Optimum about 7,000 years ago, summer temperatures in Canada were as much as 4° C above present.

Most glaciers and the last remnants of the ice sheets disappeared.[18]

The tree line moved north. At Tucktoyaktuk on the shores of the Arctic Ocean, there was a Spruce Forest.

It is all Tundra today.

Cattails and Sweet Gale grew in the wetlands in the forest at Tucktoyaktuk.

The northern limit for Cattails today is several hundred kilometers to the south.[19]

These physical details provide strong evidence that temperatures were significantly higher 7,000 years ago than they are today.

Today's temperatures are not unprecedented when proxy data from the Holocene Climate Optimum are also considered.

It is interesting to note that polar bear DNA has been traced back to about 500 kya. [20]

This means that polar bears survived the higher temperatures of both the Holocene Climate Optimum and the even higher temperatures of the Eemian Interglacial.

Polar bears do not seem to be at any risk of imminent extinction today due to our current global warming.

The green line In Fig. 8, is the average of 6 boreholes. It defines the overall temperature trend on the Greenland ice cap and the Canadian Archipelago during the Holocene.

The green line is a good example of the Milankovitch cycles in action. The Precession cycle topped out about 12 thousand years ago. The Tilt cycle topped out about 5 thousand years ago.

The combined action of the three Milankovitch Cycles is now downward and it will continue downward for about the next 14 thousand years before a minor reversal occurs.[21]

It is this downward path of the Milankovitch cycles that likely initiated the start of a new period of glaciation about 5,000 years ago.

The red line is a single borehole, but it is confirmed by other proxy data from other sources. It shows in more detail a roughly 1,000-year cycle of moderate temperature fluctuations throughout the Holocene.

The Minoan Warm Period, the Roman Warm Period, and the Medieval Warm Period were noted for their good crops and creative human developments.

The temperature dips following these highs, especially at the bottom of the Little Ice Age about 300 years ago, were times of great turmoil and hardship.

As conditions worsened, suspicion grew that diabolical forces were at work. A consensus soon developed that witches must be the source of all the starvation and misery that people were experiencing.

This soon became a hysteria, leading to witch trials, coerced confessions, and to the cruel deaths of tens of thousands of innocent women.

The persecutions were particularly cruel and numerous between 1588 and 1600 and between 1620 and 1650, which were the times of the most extreme cold and the most dreadful storms.[22]

We emerged from the Little Ice Age about 1860 and we are fortunate to be living in our current moderate Modern Warm Period.

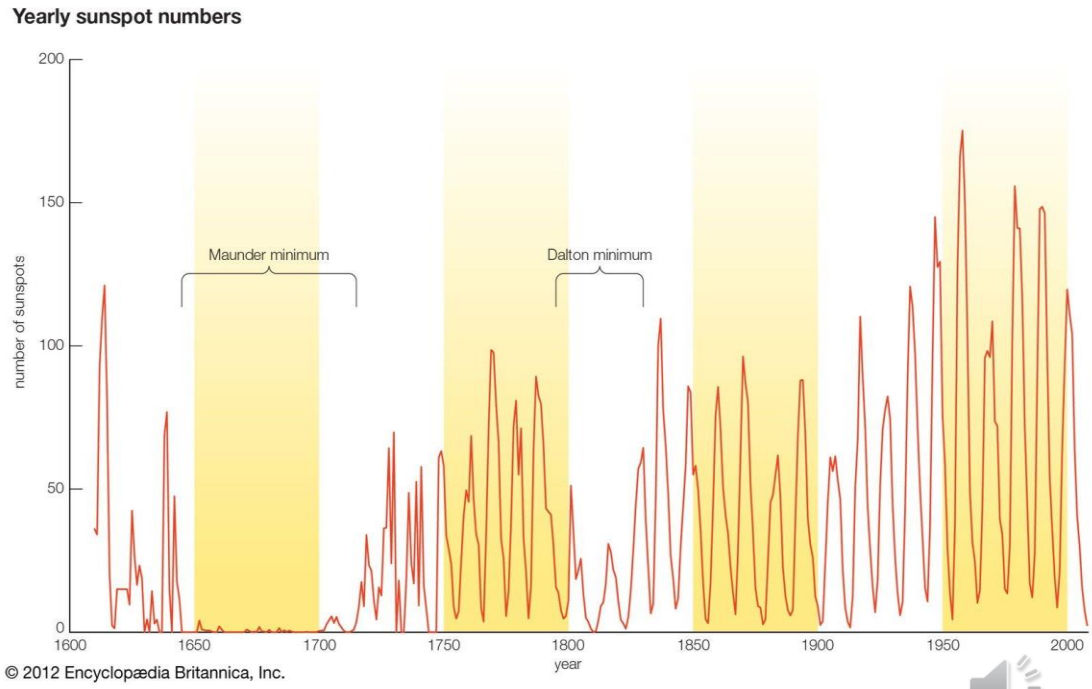


Fig. 9 Yearly Sunspot Numbers according to Encyclopedia Britannica[23]

Fig. 9 shows yearly sunspot numbers. The Maunder Minimum and the Dalton Minimum were two particularly cold periods in the Little Ice Age.

They were noted for their great crop losses, widespread starvation, and for the fact that there was little or no sunspot activity during these very cold periods.

It has been realized since then that sunspot activity is linked to regular variations in the magnetosphere of the sun.

When the magnetosphere is strong, the solar wind emanating from the sun partially blocks the flux of cosmic rays coming into the upper atmosphere where they create cloud condensation nuclei.

This reduces the formation of clouds and the albedo of the earth, allowing it to receive more incoming radiation from the sun, thereby warming the earth.

The sun's magnetosphere has doubled in strength since 1900.

This is likely a major cause of most of the warming that has occurred since 1900.[24]

Variations in the magnetosphere of the sun are also the most likely explanation for the roughly 1,000-year warming and cooling cycles that we see in the red curve over the Holocene.

When the sun's current warming phase ends and it goes into another cooling phase, this will become another negative natural force affecting climate change in addition to the downward trend that is already underway with the Milankovitch cycles.

This would be the next downward step to be expected from the green graph shown in Fig. 8. It would likely raise even more severe challenges for the population then than were experienced in the Little Ice Age. At least by then, they will know that it is not witches that are causing their troubles.

The IPCC has largely ignored the behavior of the Earth's magnetosphere and its effects on cloud formation and the resultant warming and cooling of the Earth. They have focused instead on variations in solar irradiance, which varies by only a small amount over time.

On a side note, Dr. Henrik Svensmark, who was the Head of Sun-Climate Research at the Danish National Space Centre, developed much of the theory of the effect of the sun's magnetosphere on cloud formation and the effect that this has on the earth's climate.

He was later joined in his research by Dr. Nir Shaviv, an Israeli Astro Physicist who was investigating what effect the incoming flux of cosmic rays and iron meteorites into the earth's atmosphere has on climate change on earth.

Dr. Shaviv found that the flux of cosmic rays and meteorites had a notable increase in strength about every 150 myr.

This coincides with today's current ice age, also with a sharp temperature drop about 150 mya, with the Karoo ice age 300 mya, and with another sharp temperature drop about 440 mya.

Each of these drops in temperature coincided with our solar system passing through one of the spiral arms of our Milky Way galaxy and of being exposed to a higher flux of cosmic rays and iron meteorites in the process.

This increased flux of cosmic rays penetrating into the upper atmosphere likely created more cloud cover and a higher Albedo, causing the earth to cool.[25]

This is an interesting theory as it could also explain two possible incidents of snowball earth conditions prior to 600 mya.

In summary, natural forces have had major effects on climate change in the past. Until some significant change occurs in the location of the continents, or the location and size of current mountain ranges, or the amount of radiation received from the sun, or in the flux of cosmic rays coming into our upper atmosphere, we will likely remain trapped in our current ice age.