

# *Natural Global Cooling Theory vs. Man-Made Global Warming Theory*

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## **A. Natural Global Cooling Theory**

Natural climate change on Earth is driven primarily by two processes and both are linked to the sun.

### First Process.

The sun provides the planet with light that warms the surface of the Earth. Without this warmth from the sun, the planet would be ice cold and a dead planet.

### Second Process.

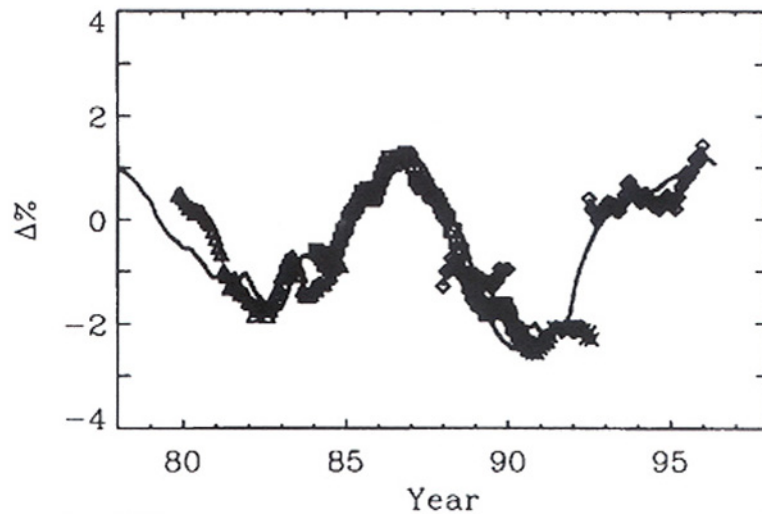
The sun indirectly modulates Earth's cloud cover. Cloud cover regulates Earth's climate. Low clouds tend to be optically thick and are efficient at reflecting radiant energy from the sun back into space. The greater the low level cloud cover, the colder the planet becomes.

Our galaxy is awash with high energy protons and ions. They are called Galactic Cosmic Rays (GCRs). These are the produce of exploding stars, called supernovas within our galaxy. These particles if they approach Earth's can penetrate deep inside the atmosphere. They are responsible for most of the atmospheric ionization on planet. The sun magnetically shields the Earth from much of this radiation.

When GCRs collide with the Earth's atmosphere, they release in nuclear collision a cascade of secondary particles (protons, neutrons and muons), which continue to penetrate deeper and deeper into the atmosphere. This cascading effect continues until the particle's energy falls too low to undergo further collisions. This generally ends around 10 miles above the Earth's surface in the lower atmosphere. These ions produced within the troposphere by cosmic rays are an important element of aerosol production. They cause very fine water molecules and small amounts of sulfuric acid to bond together to form stable cluster of water droplets, the building blocks of clouds. Charged raindrops are ten to a hundred times more efficient in capturing aerosols than uncharged drops.

The sun's magnetic field extends far out into the outer solar system. This magnetic field is wrapped in the solar winds. When the sun is active the magnetic field is very strong and deflects these charge particles away from the inner solar system and Earth. When the sun is quiet, greater numbers of these GCRs are able to penetrate our inner solar system. The sun goes through a solar cycle approximately every 22 years in which the sun reverses its magnetic polarity and then reverts back to its original polarity. During each 11 year half cycle the sun goes from a solar minimum to a solar maximum and then back again. This cycle is very visible in sunspot activity.

The research of Nigel Marsh, Henrik Svensmark and Eigil Friis-Christensen has shown a direct relationship between GCRs and cloud data as measured by satellites over the oceans.



**Figure 1.** A strong correlation between Galactic Cosmic Rays (GCRs) and Earth's cloud cover. Figure shows cosmic rays fluxes from Climax (thick curve) plotted against four satellite cloud data sets. Triangles are the Nimbus-7 data, squares are the ISCCP-C2 data, diamonds are the DMSP data, and crosses are the ISCCP-D2 data. **Source:** Svensmark, H and Friis-Christensen, E. (1997) *Journal of Atmospheric and Solar-Terrestrial Physics*, **59** (11), 1225-1232

GCRs are a very effective amplifying mechanism for climate forcing because the energy needed to change cloudiness is small compared with the resulting changes in solar radiation received at the Earth's surface.

This theory also explains the Little Ice Age. Between 1645-1715 AD, the sun's magnetic field went quiet. This period was known as the Maunder Minimum. For a comparison, during a 30 year period 1672-1699 AD there were less than 50 sunspots detected, whereas during the past century over the same period between 40,000 - 50,000 sunspots appeared. The Maunder Minimum is noted as one of the coldest periods during the past 2,000 years. It was the depths of the Little Ice Age.

So, there are two competing theories. One is called the man-made global warming theory and the other is the natural global cooling theory.

Generally in science if one proposes a theory, an experiment should be performed to prove or disprove that hypothesis. Henrik Svensmark is director of the Centre for Sun-Climate Research at the Danish Space Research Institute. He has been busy conducting those experiments over the past couple years and his results have scientifically validated the GCR – cloud link theory. This research has been published in the October, 2006, Proceedings of the Royal Society in London.

Natural variation almost entirely explains all observed temperature increases this past century, and this model, unlike the greenhouse gas model, has been experimentally vindicated.

All periods of global cooling have coincided with increasing cosmic rays and cloud formation.

Since 1900, the solar magnetic field has almost doubled, resulting in a dramatic decline in the amount of cosmic rays reaching the earth's surface. There has been a consequent temperature increase (0.6 degrees Celsius) and an 8.6% decrease in cloud cover. This temperature rise is equivalent to the amount attributed to man-made global warming by computer models.

Once you subtract out the effects of decreased natural global cooling on global temperatures since 1900, it leaves only a miniscule amount that can be attributed to man and man-made global warming.

**Bottom Line:** Global cooling is the dominant force controlling Earth's climate change. Whenever the global cooling dynamo slows down, global warming occurs naturally. These are the Best of Times, rather than the Worst of Times.

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Henrik Svensmark recently wrote a book called "The Chilling Stars: The New Theory of Climate Change". This is a good read for anyone interested in this topic.

## B. Man Made Global Warming Theory

Much of the fear surrounding the man-made global warming theory is associated with rising carbon dioxide levels. Current carbon dioxide level in the atmosphere as of January 2007 is 383 parts per million by volume. Atmospheric carbon dioxide levels have been accurately and meticulously measured beginning around the year 1812.

There are more than 90,000 accurate atmospheric carbon dioxide measurements made by various scientists and documented over the past 180 years. Most of these measurements were indiscriminately thrown out by the architects of the Man-Made Global Warming Theory.

Ernst George Beck recently reviewed these early measurements combining the results from several studies and his paper titled "180 years of Atmospheric CO<sub>2</sub> Gas Analysis by Chemical Methods" was published in *Energy & Environment*, 2007, Volume 18, Number 2.

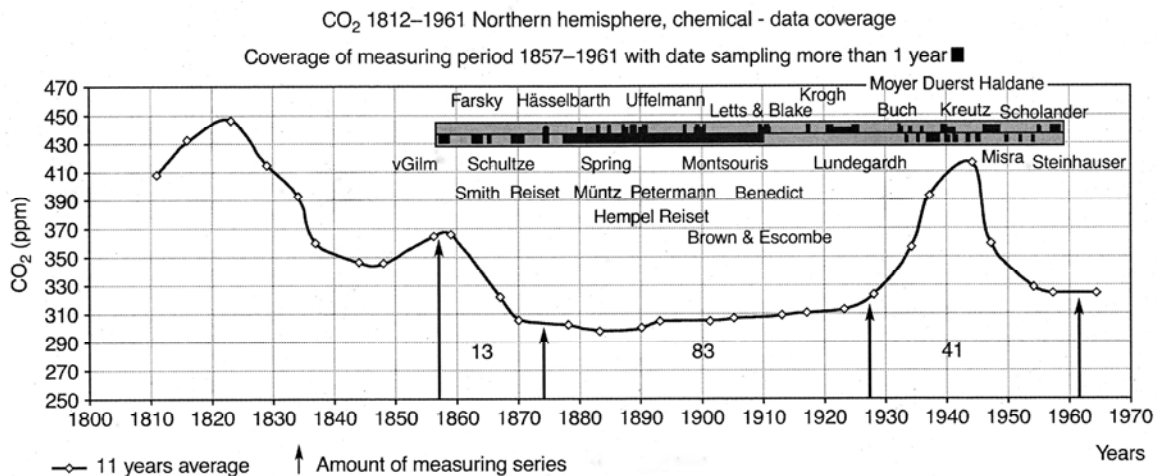


Figure 2. Measured atmospheric carbon dioxide levels for the Northern Hemisphere. Ernst-Georg Beck, *Energy & Environment*, Vol. 18, No. 2, 2007, pp 259-282.

This paper concluded actual measured atmospheric carbon dioxide levels have been higher than current levels in the recent past. The high level maxima's occurred around 1825, 1857 and 1942. The carbon dioxide levels in 1942 exceeded 400 ppm.

**Bottom Line:** The current level of carbon dioxide in the atmosphere is neither unusual nor abnormal but fits well within the range of measured levels during the 19<sup>th</sup> and 20<sup>th</sup> centuries.