

## A “Friends of Science” Response to James Hansen

On May 9, 2012, James Hansen published an op-ed in the New York Times, predicting the destruction of the world due to oil sands development in Alberta. His theory was largely premised upon related releases of greenhouse gases in processing the Alberta oil sands.

### **If it is science – where is the evidence?**

James Hansen did not offer one iota of scientific evidence in his diatribe. Hansen points to a handful of recent extreme events as if this is an indicator of anthropogenic climate change, mostly due to CO<sub>2</sub> emissions. No, this is ‘weather’ – the transient nature of atmospheric events. Climate refers to long-term trends in specific geographic areas of the globe. There is clear evidence in the temperature record that the climate has warmed during the 20th century, but this is not evidence that CO<sub>2</sub> emissions caused that warming. There is much published evidence of solar and ocean cycle induced climate changes, but this is omitted from the climate models. The scientific method requires that all factors potentially affecting climate be considered.

The Friends of Science Society does extensive climate science literature research on climate science. We think that the Sun is the main direct and indirect driver of climate change and that CO<sub>2</sub> plays a minor role. Many of us at Friends of Science are professionals in the earth sciences; we are dismayed at this blatant corruption of the scientific method.

James Hansen presented his climate model projections to the United States Senate in 1988. Hansen denies the existence of significant natural climate change and his and all climate models utilized by the IPCC do not include significant natural causes of climate change. Investigating the total array of possible causes of climate change was not in the mandate given to the IPCC. Hansen presented temperature projections assuming two projections of increasing greenhouse gases, and a third projection assuming a rapid decline in greenhouse gas emissions where the CO<sub>2</sub> content stays constant after the year 2000. The actual global average temperatures for 2011 are below his third projection (no increase in CO<sub>2</sub>) despite the continued increase in CO<sub>2</sub> concentrations. Clearly, Hansen's projections are an abysmal failure.

Solar activity correlates very well with global temperatures. A correlation of the Sun's activity to temperature shows the Sun has caused at least 75% of the warming of the last century. The Sun affects temperatures not just by changes to the total solar energy, but by affecting clouds and ozone through its magnetic influences. The solar activity was high during the Medieval Warm Period, low during the Little Ice Age when there were no sun spots, and increased through most of the 20th century. Solar activity in the last half of the 20th century was the highest in 8000 years. Hansen's projections are much too high because he falsely assumes that all of the 20th century climate change was caused by greenhouse gas emissions.

Global surface temperatures have been declining at 0.09 C/decade from January 2002 to December 2011 according to the HadCRUT3 dataset. The IPCC projected the temperatures would be increasing at 0.2 C/decade. More accurate satellite observations show no warming has taken place over the past decade.

A comparison of climate model hindcasts (projections of the past) to actual temperatures shows that they cannot replicate the past temperature history of the 20th century. The climate model sea surface warming trend at the equator from 1981 is 6 times higher than measured by satellites. The models are made to match the warming trend from 1975 to 2002 by assuming most of the warming is due to CO<sub>2</sub> and using an assumed high sensitivity to greenhouse gases. The global warming rate from 1910 to 1944 was identical to the global warming rate from 1976 to 2000, but the earlier warming could not have been caused by CO<sub>2</sub> because emissions were low. The climate model hindcasts warming rate is only 22% of the actual warming rate from 1910 to 1944 because the models do not include natural climate change. The Earth cooled from 1944 to 1975, but the models show a small warming. Now that the Sun has become less active, temperatures have declined slightly.

Hansen claims that regions of the USA will develop semi-permanent drought", with extreme rain events. There is no evidence of this. It appears to be an artifact of unstable climate models. There has been no trend in droughts or floods with global warming. The worst drought in North America of the last century occurred during the 1930's when CO<sub>2</sub> emissions were very low.

Hansen mentions deaths during recent heat waves (mostly among the elderly), but in fact the health benefits of a warmer planet are many times greater than any harmful effects. A study of death rates in the United Kingdom shows that with adaptation, there were only 0.7 death per million people per year due to warming in the hottest part of the year, but a decrease of 85 deaths per million people per year due to warming in the coldest part of the year, for a phenomenal lives-saved to life-lost ratio of 121. Warming is good for us.

Hansen also fails to consider the benefits of CO<sub>2</sub> fertilization. CO<sub>2</sub> is plant food. A 300 ppm CO<sub>2</sub> increase would raise the forest's productivity by about 50%. About 15% of our crop yields are due to elevated CO<sub>2</sub> levels. The length of the growing season in Canada would increase by about 10 days per degree C increase in mean annual temperature.

The reason climate models project too much CO<sub>2</sub> induced warming is that they assume water vapour, the most important greenhouse gas, will increase in the upper atmosphere, and clouds will change to amplify the small direct warming effect from CO<sub>2</sub> three fold. But in fact, weather balloon data show that water vapour has declined 13% at 8 km altitude since 1960 in the tropics allowing heat to escape to space. A change of water vapour at 8 km altitude has 30 times the greenhouse effect as the same change near the surface. Water vapour helps to stabilize global temperatures.

It is like pouring sand, say by a mining operation, into a small lake and worrying that this will cause the lake level to rise. In fact, the lake level is determined by the spill point of the out-flowing river, so the sand just replaces a water volume and the lake level does not rise. Likewise, adding CO<sub>2</sub> to the atmosphere replaces a volume of upper atmosphere water vapour, so there is very little increase in the total effective amount of greenhouse gases.

The climate models project that water vapour will increase causing an enhanced warming rate in the upper atmosphere over the tropics, but the IPCC computer-modeled temperature trend at 8 km altitude from 1979 to 2009 is about 4 times higher than observed by satellite and weather balloons. The observations falsify the climate model projections.

### **Mass hysteria is a poor driver of sound public policy**

Yet governments around the world, responding to the terrible fear the global warming cult has spread amongst ordinary citizens, have implemented carbon taxes that attempt to reduce this beneficial gas. In the past decade global governments have spent a trillion dollars trying to control CO2 emissions for no benefit to the environment and to the detriment of taxpaying citizens. Only the AGW industry benefits by the massive subsidies to wind and solar energy companies, research grants to IPCC scientist and profits to the cap-and-trade scam artists.

To combat this non-existent CO2 threat, 'renewable energy' companies have been underwritten for millions of dollars, far in advance of the energy producing capacity of these emerging technologies. This has led to a crushing burden of debt and the destruction of many industries – and the loss of jobs. In Ontario, solar and wind generated electricity cost up to 12 and 3 times that of electricity from conventional sources, respectively. In the US, 25% of the corn crop is turned into ethanol to fuel automobiles, pushing up food prices. Biofuel policies caused 192,000 excess deaths from malnutrition and poverty in the developing world in 2010.

As Friends of Science, we speak out, demanding a calm and practical assessment of the issues based on the scientific method and without reference to mass hysteria or propaganda. We publish climate science information on two websites; [friendsofscience.org](http://friendsofscience.org) for the technically inclined, and [climatechange101.ca](http://climatechange101.ca) for non-technical people.

James Hansen's predictions have been proven wrong to date, as have all of those of the IPCC.