Warming Core

[Warming Core 1](#_Toc328991938)

[\*\*Warming Bad 4](#_Toc328991939)

[Warming Bad – Ag/Biodiversity 1/3 4](#_Toc328991940)

[Warming Bad – Ag/Biodiversity 2/3 5](#_Toc328991941)

[Warming Bad – Ag/Biodiversity 3/3 6](#_Toc328991942)

[Warming Bad – Biodiversity 7](#_Toc328991943)

[Warming Bad – Economy 8](#_Toc328991944)

[A2 CO2 Key to Ag 9](#_Toc328991945)

[A2 Ice Age 10](#_Toc328991946)

[A2 Ice Age Coming 11](#_Toc328991947)

[Ice Caps Impact 12](#_Toc328991948)

[Impact Magnifier 13](#_Toc328991949)

[\*\*Advantage CP 14](#_Toc328991950)

[Carbon Tax CP 14](#_Toc328991951)

[Carbon Tax Solves Emissions 1/2 15](#_Toc328991952)

[Carbon Tax Solves Emissions 2/2 16](#_Toc328991953)

[Carbon Tax Generates Revenue 17](#_Toc328991954)

[Carbon Tax Solves Econ 18](#_Toc328991955)

[A2 Carbon Tax CP 19](#_Toc328991956)

[\*\*A2 Solvency 20](#_Toc328991957)

[Warming Inevitable 20](#_Toc328991958)

[Alt Causes 1/2 21](#_Toc328991959)

[Alt Causes 2/2 22](#_Toc328991960)

[A2 CO2 Reductions Solve 23](#_Toc328991961)

[A2 China Key 24](#_Toc328991962)

[\*\*Real 25](#_Toc328991963)

[Warming is Real 25](#_Toc328991964)

[Warming is Anthropogenic 26](#_Toc328991965)

[CO2 → Warming 1/2 27](#_Toc328991966)

[CO2 → Warming 2/2 28](#_Toc328991967)

[A2 Warming Inevitable 29](#_Toc328991968)

[\*\*Not Real 30](#_Toc328991969)

[No Warming 1/2 30](#_Toc328991970)

[No Warming 2/2 31](#_Toc328991971)

[Not Anthro 32](#_Toc328991972)

[CO2 ≠ Warming 33](#_Toc328991973)

[Yes Bias 1/2 34](#_Toc328991974)

[Yes Bias 2/2 35](#_Toc328991975)

[A2 Emissions → Warming 36](#_Toc328991976)

[A2 Climate Research 37](#_Toc328991977)

[A2 Greenhouse Theory 38](#_Toc328991978)

[\*\*Impact Defense 39](#_Toc328991979)

[War Outweighs 39](#_Toc328991980)

[A2: Peak Oil 40](#_Toc328991981)

[A2 Warming × Agriculture 41](#_Toc328991982)

[A2 Warming × Biodiversity 42](#_Toc328991983)

[A2 Warming → Civil Wars 43](#_Toc328991984)

[A2 Warming × Human Health 44](#_Toc328991985)

[A2 Warming × Ice Caps 45](#_Toc328991986)

[A2 Warming → Malaria 46](#_Toc328991987)

[A2 Warming → Resource Wars 47](#_Toc328991988)

[A2 Warming → Rising Sea Levels 48](#_Toc328991989)

[A2 Warming → Water Wars 49](#_Toc328991990)

[\*\*Warming Good 50](#_Toc328991991)

[Warming Good – Agriculture 1/3 50](#_Toc328991992)

[Warming Good – Agriculture 2/3 51](#_Toc328991993)

[Warming Good – Agriculture 2/3 52](#_Toc328991994)

[Agriculture Impact 53](#_Toc328991995)

[Warming Good – Ice Age 1/2 54](#_Toc328991996)

[Warming Good – Ice Age 2/2 55](#_Toc328991997)

[Ice Age Coming 56](#_Toc328991998)

[Ice Age O/Ws 57](#_Toc328991999)

\*\*Warming Bad

Warming Bad – Ag/Biodiversity 1/3

Warming destroys ag and causes loss of biodiversity – squo levels of warming prevents adaptation

Revkin ‘8 (ANDREW C. REVKIN, correspondent for the New York Times, Jan. 24, “Earth Scientists Express Rising Concern Over Warming”, http://dotearth.blogs.nytimes.com/2008/01/24/earth-scientists-express-rising-concern-over-warming/)

During recent millennia of relatively stable climate, civilization became established and populations have grown rapidly. In the next 50 years, even the lower limit of impending climate change — an additional global mean warming of 1 degree Celsius above the last decade — is far beyond the range of climate variability experienced during the past thousand years and poses global problems in planning for and adapting to it. Warming greater than 2 degrees Celsius above 19th century levels is projected to be disruptive, reducing global agricultural productivity, causing widespread loss of biodiversity, and — if sustained over centuries — melting much of the Greenland ice sheet with ensuing rise in sea level of several meters. If this 2 degrees Celsius warming is to be avoided, then our net annual emissions of carbon dioxide must be reduced by more than 50 percent within this century. With such projections, there are many sources of scientific uncertainty, but none are known that could make the impact of climate change inconsequential. Given the uncertainty in climate projections, there can be surprises that may cause more dramatic disruptions than anticipated from the most probable model projections.

Climate change and CO2 destroys crops

US EPA June 14th, 2012 (United States Environmental Protection Agency, “Agriculture and Food Supply Impacts & Adaptation”, http://www.epa.gov/climatechange/impacts-adaptation/agriculture.html)

Crops grown in the United States are critical for the food supply here and around the world. U.S. exports supply more than 30% of all wheat, corn, and rice on the global market. [2] Changes in temperature, amount of carbon dioxide (CO2), and the frequency and intensity of extreme weather could have significant impacts on crop yields. Warmer temperatures may make many crops grow more quickly, but warmer temperatures could also reduce yields. Crops tend to grow faster in warmer conditions. However, for some crops (such as grains), faster growth reduces the amount of time that seeds have to grow and mature. [1] This can reduce yields (i.e., the amount of crop produced from a given amount of land). For any particular crop, the effect of increased temperature will depend on the crop's optimal temperature for growth and reproduction. [1] In some areas, warming may benefit the types of crops that are typically planted there. However, if warming exceeds a crop's optimum temperature, yields can decline. Higher CO2 levels can increase yields. The yields for some crops, like wheat and soybeans, could increase by 30% or more under a doubling of CO2 concentrations. The yields for other crops, such as corn, exhibit a much smaller response (less than 10% increase). [3] However, some factors may counteract these potential increases in yield. For example, if temperature exceeds a crop's optimal level or if sufficient water and nutrients are not available, yield increases may be reduced or reversed. More extreme temperature and precipitation can prevent crops from growing. Extreme events, especially floods and droughts, can harm crops and reduce yields. For example, in 2008, the Mississippi River flooded just before the harvest period for many crops, causing an estimated loss of $8 billion for farmers. [1] Dealing with drought could become a challenge in areas where summer temperatures are projected to increase and precipitation is projected to decrease. As water supplies are reduced, it may be more difficult to meet water demands. Many weeds, pests and fungi thrive under warmer temperatures, wetter climates, and increased CO2 levels. Currently, farmers spend more than $11 billion per year to fight weeds in the United States. [1] The ranges of weeds and pests are likely to expand northward. This would cause new problems for farmers' crops previously unexposed to these species. Moreover, increased use of pesticides and fungicides may negatively affect human health. [1]

Warming Bad – Ag/Biodiversity 2/3

Warming destroys world supplies of crops

Common Dreams.org Jan 29th, 2012 (independent, non-profit newscenter providing breaking news & views to the progressive community, “New Study: Global Warming Threatens World's Wheat Crop” http://www.commondreams.org/headline/2012/01/29-2)

A study released Sunday afternoon finds that wheat crop yields could plunge due, in part, to climate change. Extreme temperatures are already cutting wheat yields in India (Narinder Nanu/AFP) The study, published in Nature Climate Change, researchers warn that current projections underestimate the extent to which hotter weather in the future will accelerate this process. Extreme heat causes wheat crops to age faster and reduce yields, the Stanford University-led study shows, underscoring the challenge of feeding a rapidly growing population as the world continues to warm. New Scientist magazine reported Sunday: It could be much more difficult than we thought to feed everyone in a warmer world. Satellite images of northern India have revealed that extreme temperatures are cutting wheat yields. What's more, models used to predict the effects of global warming on food supply may have underestimated the problem by a third. Two-thirds of wheat in poor countries, and 23 per cent in rich countries – nearly half the world's total crop – is at risk from warming.In India's breadbasket, the Ganges plain, winter wheat is planted in November and harvested as temperatures rise in spring. David Lobell of Stanford University in California used nine years of images from the MODIS Earth-observation satellite to track when wheat in this region turned from green to brown, a sign that the grain is no longer growing. He found that the wheat turned brown earlier when average temperatures were higher, with spells over 34 ºC having a particularly strong effect. [...] Lobell's work suggests losses could be sooner and greater. "This is an early indication that a situation that was already bad could be even worse," says Andy Challinor of the University of Leeds, UK. Previous estimates suggested that by 2050, warming could cut wheat yields by 30 per cent in places like India – a figure that may now be optimistic. Yet global yields need to rise 50 per cent by then to feed the growing population. Reuters reports: Extreme heat can cause wheat crops to age faster and reduce yields, a U.S.-led study shows, underscoring the challenge of feeding a rapidly growing population as the world warms. Scientists and farmers have long known that high heat can hurt some crops and the Stanford University-led study, released Sunday, revealed how the damage is done by tracking rates of wheat aging, or senescence. Depending on the sowing date, the grain losses from rapid senescence could reach up to 20 percent, the scientists found in the study, published in the journal Nature Climate Change. [...] Climate scientists say that episodes of extreme heat are becoming more frequent and more prevalent across the globe, presenting huge challenges for growing crops. Wheat is the second most produced crop in the world after corn and the United Nation's Food and Agriculture Organization says global food production must increase by 70 percent by 2050 to feed a larger, more urban and affluent population. Wheat is particularly sensitive to temperature and is typically sown in late autumn or early winter and harvested before the heat of summer. Agence France-Presse adds: Wheat also faces another possibly climate-related threat: aggressive new strains of wheat rust disease have decimated up to 40 percent of harvests in some regions of north Africa, the Middle East and Central Asia. Wheat rust is a fungal disease that attacks the stems, grains and especially the leaves of grains including wheat, barley and rye. Global warming and increased variability of rainfall have weakened the plants even as these emerging rust strains have adapted to extreme temperatures not seen before, scientists say. In November, the UN's climate science panel concluded that man-made climate change has boosted the frequency or intensity of heat waves, and that such extreme weather events are virtually certain to increase in the future. If greenhouse gas emissions continue unabated, one-in-20-year heat peaks would likely occur every five years by about 2050, and every year or two by the end of the century, the Intergovernmental Panel on Climate Change (IPCC) said in a 1,000-page report.

Warming kills livestock

US EPA June 14th, 2012 (United States Environmental Protection Agency, “Agriculture and Food Supply Impacts & Adaptation”, http://www.epa.gov/climatechange/impacts-adaptation/agriculture.html)

Americans consume more than 37 million tons of meat annually. [2] The U.S. livestock industry produced $100 billion worth of goods in 2002. [4] Changes in climate could affect animals both directly and indirectly. Heat waves, which are projected to increase under climate change, could directly threaten livestock. A number of states have each reported losses of more than 5,000 animals from just one heat wave. [1] Heat stress affects animals both directly and indirectly. Over time, heat stress can increase vulnerability to disease, reduce fertility, and reduce milk production. Drought may threaten pasture and feed supplies. Drought reduces the amount of quality forage available to grazing livestock. Some areas could experience longer, more intense droughts, resulting from higher summer temperatures and reduced precipitation. For animals that rely on grain, changes in crop production due to drought could also become a problem. Climate change may increase the prevalence of parasites and diseases that affect livestock.The earlier onset of spring and warmer winters could allow some parasites and pathogens to survive more easily. In areas with increased rainfall, moisture-reliant pathogens could thrive. [3]

Warming Bad – Ag/Biodiversity 3/3

Genetic crop adaptation doesn’t solve agriculture

Coco Liu April 2, 2012 (E&E Asian correspondent, E&E News, “As climate becomes less certain, so does China's ability to feed itself”, http://www.eenews.net/public/climatewire/2012/04/02/1)

Worse yet, China is losing its ability to produce more. During the past decades, farmers here have enjoyed an explosion of productivity, thanks partly to genetically manipulated crops that are higher-yielding and resistant to pests and diseases. But today, that help is starting to fade away, as it is falling victim to climate change. "In the 1970s, when we used genetic engineering technology to breed regionally adopted crops, we could enjoy its high yield for years; now that period is much shorter," said Pan Genxing, director of Agriculture and Climate Change Center at Nanjing Agriculture University. What is defeating the technology, according to Pan, is that the environment in which the crops grow keeps changing due to climate change, making regionally adopted crops no longer a fit for the region they were designed to.

Climate change reduce yields of crops- evaporation overwhelms precipitation rates

Cline 08

(William R. Cline is an American economist with a Ph.D at Yale; and a member of the Center for Global Development; *Finance and Development*, “Global Warming and Agriculture”, March 2008; http://www.imf.org/external/pubs/ft/fandd/2008/03/pdf/cline.pdf, pg. 27, DOA: 6-30-12)

Climate change can affect agriculture in a variety of ways. Beyond a certain range of temperatures, warming tends to reduce yields because crops speed through their development, producing less grain in the process. And higher temperatures also interfere with the ability of plants to get and use moisture. Evaporation from the soil accelerates when temperatures rise and plants increase transpiration—that is, lose more moisture from their leaves. The combined effect is called “evapotranspiration.” Because global warming is likely to increase rainfall, the net impact of higher temperatures on water availability is a race between higher evapotranspiration and higher precipitation. Typically, that race is won by higher evapotranspiration.

Warming brings beetle infestation, and droughts which will hurt forest populations

Washington Post 5/13/12

(Washington Post, “Global warming threatens pine forests, forcing federal officials to shift strategy”, May 13, 2012, http://www.washingtonpost.com/national/health-science/global-warming-threatens-pine-forests-forcing-federal-officials-to-shift-strategy/2012/05/13/gIQAEHVXNU\_story.html, pg. 1, DOA: 6-30-12)

The conifer, with its accoutrements, represents a small salvo in the battle against a beetle infestation, fueled partly by warmer temperatures. But it is also a larger symbol of how researchers from the Forest Service — in concert with National Park Service officials and other scientists — are working to steel high-elevation pine forests in the West against the onslaught of climate change. Scientists know that global warming will reshape these forests, which provide crucial habitat and food for key species, curb soil erosion and slow melting snow destined for local water supplies. What they don’t yet understand is which trees are best poised to survive under these changed conditions and how they can help them adapt in the decades to come. Although it’s had its share of pests and pathogens, the pine forest here is in better shape than some nearby. Scientists are trying to figure out how to keep it that way.Global warming could affect everything from national forests’ and grasslands’ vegetation to their stream flows, and the agency has a comprehensive plan to deal with it. Managers must keep a performance score card on everything from how educated staff are on climate change to how much carbon is stored in trees and vegetation in their areas. They’ve started planting some species at higher elevations, such as yellow cedar in Alaska, and near river banks to lower stream temperatures. And they’ve launched a pilot project to assess the vulnerability of watersheds in a dozen national forests. At Virginia’s George Washington and Jefferson National Forests, for example, managers are planning to construct stream crossings and bridges that can withstand major storm events, and to use fire more frequently to restore pine forests under pressure from the Southern pine beetle. Out West, high-elevation five-needle pines — which include the species whitebark, limber, foxtail, Southwestern white, Rocky Mountain bristlecone and Great Basin bristlecone — are particularly vulnerable to climate change. Warmer temperatures have allowed native beetles to grow and feed on trees at a faster rate. Water deprivation and drought can also hurt them, and they can be crowded out by other tree species migrating to higher altitudes.

Warming Bad – Biodiversity

Climate change will cause max extinction of species

Bellard et al. Jan 18th, 2012 (Bellard, C., Bertelsmeier, C., Leadley, P., Thuiller, W. and Courchamp, F. (2012), "Impacts of climate change on the future of biodiversity. Ecology Letters, 15: 365–377)

Ecologists are developing a better understanding of the mechanisms by which species and ecosystems can be impacted by climate change. The timing of species’ life cycle events is expected to be further altered, species distributions will change radically, trophic networks will be affected and ecosystem functioning may be severely impaired, leading in the worst cases to countless species extinctions. Over the past decades, some of this understanding has been effectively translated into mathematical models that can be used to forecast climate change impacts on species distributions, abundance and extinctions. These models are characterised by their high diversity of underlying structures and assumptions, with predictions differing greatly depending on the models used and species studied. Most of these models indicate alarming consequences for biodiversity with worst-case scenarios leading to extinction rates that would qualify as the sixth mass extinction in the history of the earth (Barnosky et al. 2011). However, all current approaches have serious weaknesses. An evaluation of known mechanisms of climate impacts on biodiversity suggests that the lack of several key mechanisms in models may lead to either very large underestimations or overestimations of risks for biodiversity. Improvements in existing models and, in particular, a new generation of models must address the shortcomings of current models to reduce uncertainties. It is also crucial to improve our understanding of the vulnerability of biodiversity to climate change, to develop other predictive approaches and to go beyond predictions.

Warming Bad – Economy

Global warming collapses the economy

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA: 7-1-12)

[Slide 3] Our national and world economy is precariously based on the assumption that climatic conditions will remain the same in the future as they have been in the past. Global warming is going to negate that assumption. Even a little bit of climate change can cause disruption to our economy and to the natural world. [Slide 4] Global warming is not the only process that threatens to disrupt our economy in the future. Population growth is also a threat. For example, the rapid population growth in the American southwest is already putting strain on water supplies. Global climate change mayreduce snowpack in the Rockies and Sierra Nevada and encourage the spread of deserts. The intersection of rapid population growth and global-climate-change-induced water shortages may prove disastrous for the American economy. A similar situation is developing in the Himalayas, Andes, and Africa.

A2 CO2 Key to Ag

Plants can’t store all the excess CO2 in the environment -

National Science Foundation ’06

[National Science Foundation, NSF, is an independent federal organization created by the Congress that addresses the issue of advancing health and science; Apr 13, “Higher Carbon Dioxide, Lack of Nitrogen Limit Plan Growth,” http://www.nsf.gov/news/news\_summ.jsp?cntn\_id=106861, DOA: 7-1-12]

Earth's plant life will not be able to "store" excess carbon from rising atmospheric carbon dioxide levels as well as scientists once thought because plants likely cannot get enough nutrients, such as nitrogen, when there are higher levels of carbon dioxide, according to scientists publishing in this week's issue of the journal Nature. That, in turn, is likely to dampen the ability of plants to offset increases in atmospheric carbon dioxide. "We found that atmospheric carbon dioxide levels may rise even faster than anticipated, because ecosystems likely will not store as much carbon as had been predicted," said Peter Reich of the University of Minnesota, lead author of the study, which was conducted at the National Science Foundation (NSF)'s Cedar Creek Long-Term Ecological Research (LTER) site in Minn.

A2 Ice Age

CO2 will cause melting of ice-caps which will lead to disrupted world weather patterns- Gulf Stream would shut down

Hartmann '04

[Thom, Political Analyst, Jan 20, "How Global Warming May cause the Next Ice Age," http://www.commondreams.org/views04/0130-11.htm, DOA: 7-1-12]

While global warming is being officially ignored by the political arm of the Bush administration, and Al Gore's recent conference on the topic during one of the coldest days of recent years provided joke fodder for conservative talk show hosts, the citizens of Europe and the Pentagon are taking a new look at the greatest danger such climate change could produce for the northern hemisphere - a sudden shift into a new ice age. What they're finding is not at all comforting. In quick summary, if enough cold, fresh water coming from the melting polar ice caps and the melting glaciers of Greenland flows into the northern Atlantic, it will shut down the Gulf Stream, which keeps Europe and northeastern North America warm. The worst-case scenario would be a full-blown return of the last ice age - in a period as short as 2 to 3 years from its onset - and the mid-case scenario would be a period like the "little ice age" of a few centuries ago that disrupted worldwide weather patterns leading to extremely harsh winters, droughts, worldwide desertification, crop failures, and wars around the world.

Results of shut down of Gulf Stream would be drastic- Much of the U.S. would be uninhabitable permanently

Hartmann '04

[Thom, Political Analyst, Jan 20, "How Global Warming May cause the Next Ice Age," http://www.commondreams.org/views04/0130-11.htm, DOA: 7-1-12]

If the Great Conveyor Belt, which includes the Gulf Stream, were to stop flowing today, the result would be sudden and dramatic. Winter would set in for the eastern half of North America and all of Europe and Siberia, and never go away. Within three years, those regions would become uninhabitable and nearly two billion humans would starve, freeze to death, or have to relocate. Civilization as we know it probably couldn't withstand the impact of such a crushing blow.

Warming is already causing the new ice age now- Gulf Stream is weakening

McGuire ’03

[Bill, director of the Benfield Hazard Research Centre at University College, and a professor of Geophysical Hazards London, Nov 13, “Will global warming trigger a new ice age?” http://www.guardian.co.uk/environment/2003/nov/13/comment.research, DOA:7-1-12]

Is this really true, or could the rapidly accelerating warming that we are experiencing actually hasten the onset of a new ice age? A growing body of evidence suggests that, at least for the UK and western Europe, there is a serious risk of this happening - and soon. The problem lies with the ocean current known as the Gulf Stream, which bathes the UK and north-west Europe in warm water carried northwards from the Caribbean. It is the Gulf Stream, and associated currents, that allow strawberries to thrive along the Norwegian coast, while at comparable latitudes in Greenland glaciers wind their way right down to sea level. The same currents permit palms to flourish in Cornwall and the Hebrides, whereas across the ocean in Labrador, even temperate vegetation struggles to survive. Without the Gulf Stream, temperatures in the UK and north-west Europe would be five degrees centigrade or so cooler, with bitter winters at least as fierce as those of the so-called Little Ice Age in the 17th to 19th centuries. The Gulf Stream is part of a more complex system of currents known by a number of different names, of which the rather cumbersome North Atlantic Meridional Overturning Circulation (Namoc) is probably the most apt. This incorporates not only the Gulf Stream but also the cold return currents that convey water southwards again. As it approaches the Arctic, the Gulf Stream loses heat and part of it heads back to warmer climes along the coast of Greenland and eastern Canada in the form of the cold, iceberg-laden current responsible for the loss of the Titanic. Much, however, overturns - cooling and sinking beneath the Nordic seas between Norway and Greenland, before heading south again deep below the surface. In the past, the slowing of the Gulf Stream has been intimately linked with dramatic regional cooling. Just 10,000 years ago, during a climatic cold snap known as the Younger Dryas, the current was severely weakened, causing northern European temperatures to fall by as much as 10 degrees. Ten thousand years before that, at the height of the last ice age, when most of the UK was reduced to a frozen wasteland, the Gulf Stream had just two-thirds of the strength it has now. What's worrying is that for some years now, global climate models have been predicting a future weakening of the Gulf Stream as a consequence of global warming. Such models visualise the disruption of the Namoc, including the Gulf Stream, as a result of large-scale melting of Arctic ice and the consequent pouring of huge volumes of fresh water into the North Atlantic, in a century or two. New data suggest, however, that we may not have to wait centuries, and in fact the whole process may be happening already.

A2 Ice Age Coming

Ice age is unlikely to happen; The worst warming for Earth is coming

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA: 7-1-12)

First, over the last 400,000 years, there have been four ice ages. Right now, global temperatures are as warm as they have ever been during any previous interglacial period. If Michael Mann is right, even warmer. Second, global temperature and atmospheric carbon dioxide are pretty precisely correlated: it is hot when the air has more carbon dioxide in it. Third, the current levels of carbon dioxide far exceed the carbon dioxide levels of any time in the last half million years. What this may mean is that we have yet to see most of the global warming that all of that extra carbon dioxide will cause. The Earth has just put its sweater on during the last century—watch out!

Solar activity will continue even if it doesn’t seem so in status quo; CO2 will contribute to warming

Thompson ’08

[Andrea, Live Science, Jun 12, “Could Waning Sunspots Bring On New Ice Age?”, http://www.foxnews.com/story/0,2933,366061,00.html, DOA: 7-1-12]

The sun's surface has been fairly blank for the last couple of years, and that has some worried that it may be entering another Maunder minimum, the sun's 50-year abstinence from sunspots, which some scientists have linked to the Little Ice Age of the 17th century. Could a new sunspot drought plunge us into another decades-long cold spell? It's not very likely, says David Hathaway a solar physicist at NASA's Marshall Space Flight Center in Huntsville, Ala. The question came up after an international solar conference held last week at Montana State University, where scientists discussed the dearth of solar activity in the last couple years."It continues to be dead," said SakuTsuneta with the National Astronomical Observatory of Japan and program manager for the Hinode solar mission. "That's a small concern, a very small concern," because the period of inactivity seems to be going on longer than normal. Some scientists think such inactive periods, such as the Maunder minimum, are responsible for cold spells in the past, such as the Little Ice Age. The sun's energy drives all climate and weather on Earth. And Hathaway does agree there are good indications that fluctuations in solar output related to sunspot cycles influence the Earth's climate. The Maunder minimum isn't the only evidence — scientists have linked two smaller sunspot minimums (periods of time with very few sunspots) in the early 19th century to cold spells, as well as periods before the Maunder minimum deduced from tree-ring records, he said. But the sun isn't the only thing that influences our climate: volcanic eruptions, large-scale phenomena such as El Niño, and, more recently, the accumulation of greenhouse gases in the atmosphere also affect the global climate. Prior to the industrial revolution, the sun probably accounted for about 10 to 30 percent of climate variability, Hathaway told SPACE.com, but now that greenhouse gases have started to build up, "the sun's contribution is getting smaller and smaller," he added. Short solar cycle? Solar cycles are the ebb and flow of the sun's magnetic activity over a roughly 11-year period, which affects the formation of solar features such as solar flares and sunspots. Sunspots are cooler, dimmer areas on the sun's surface. The last solar cycle, which peaked in 2001, was a particularly intense one, with an upsurge in solar storms between 2000 and 2002. Such intense activity in the peak of the solar cycle tends to lead to less activity at the end of the cycle. Signs of the current, new solar cycle (which actually overlaps with the last cycle) showed up in November 2006, and its first sunspots were seen in January of this year, and again in April, Hathaway said. So already that rules out another Maunder minimum, Hathaway says, since this solar cycle has already begun producing spots, even if there haven't been many of them yet. This cycle is just simply "off to a slow start," Hathaway said. The last three solar cycles were also what Hathaway calls "big cycles," meaning they had more than the average number of sunspots (the average is around 110 to 120 sunspots on any given day during the cycle's maximum). It's not unusual for such a spate of prolific cycles to be followed my more muted solar cycles (such as the cycle that preceded the last three biggies). Hathaway says that solar physicists are divided on their predictions of this new solar cycle — some say it will be small, others say it will be another doozy. Predictions have ranged anywhere from 75 to 150 maximum spots during its peak. "There really are two camps," Hathaway said. Whatever the number ends up being, though, "it's not zero," he added. Why the sun is so fickle in its sunspot production is still something of a quandary."We still don't fully understand how the sun does this,"

Ice Caps Impact

**Melting ice caps are bad – species extinction and costs more than any benefits**

The Economist Jun 16th, 2012 (“Cold comfort”, http://www.economist.com/node/21556805)

The impending enrichment of Arctic countries would not compensate for the costs of runaway Arctic warming. Arctic species, habitats and quite possibly whole ecosystems would be lost. No Arctic country—not even Russia, which has a poor history of conservation—could contemplate wreaking such environmental havoc unilaterally. Yet all are happy to profit from it. That makes the Arctic a textbook illustration of the commons-despoiling tragedy that climate change is. The costs to the world are likely to be greater than those to the Arctic, however. Arctic glaciers—including the Greenland ice sheet—are melting and disintegrating faster than expected. If this were to continue over a couple of centuries, there would be a strong chance of catastrophic rises in sea levels; this alone might cost the world more than it stands to benefit from Arctic resources. As a symptom of global warming, moreover, the warming Arctic is indivisible from the manifold costs it will entail. The World Bank estimates the cost of adapting to climate change between 2010 and 2050 at $75 billion-100 billion a year; other estimates are higher.

Impact Magnifier

The impact of warming is unpredictable – positive feedback loops

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA:7-1-12)

[Slide 23] And this brings us to one of the biggest dangers of global warming. Global warming makes itself worse through what are called positive feedback loops. The above example is one of them. Global warming causes more decomposition which causes more greenhouse gases which cause more global warming. This is especially calamitous in the arctic, where there are thick layers of tundra ooze that are, at this moment, decomposing and releasing methane into the air. Some Siberian lakes no longer freeze in the winter because of methane bubbling up from decomposition. [Slide 24] Another example is the role of arctic ice. Ice reflects visible light back into outer space. This light never gets a chance to warm the Earth. Ice cools the Earth not just because it is ice but because it is white. As a matter of fact, there were three periods of time in Earth history when the ice spread across the globe so much that it very nearly turned Earth into an ice planet. Scientists call these periods Snowball Earth. The most recent one ended just 600 million years ago. Earth was mighty lucky to emerge from those periods. Ice reflects light which makes the Earth cooler which allows more ice to form which reflects more light and so on. On the other hand, as ice melts, the dark ocean water absorbs more light and becomes warmer, making more ice melt, which allows the ocean to absorb more light, and so on. With global climate change, we are not dealing with direct linear processes that are easily predictable.We are working with positive feedback loops that can catch us by surprise.There are negative feedback loops also. I mentioned one a while back: more carbon dioxide means more plant growth, which reduces, not increases, the carbon dioxide. Unfortunately, it is the helpful negative loops that we are interfering with and the harmful positive loops that we are exacerbating.

Global warming’s negative impacts will overwhelm its benefits

Cerutti 07

(Furio Cerutti is an Italian philosopher who works on the theory of global challenges including global warming and international relations; *Global Challenges for Leviathan: A Political Philosophy of Nuclear Weapons and Global Warming;* Lexington Books: 2007; pgs. 107)

A first real challenge for humankind lies in what may happen in the near future, that is the time form now to 2100, to which most of the IPCC forecasts are limited. For all of the socio-economic scenarios taken into consideration and the resulting emissions (disregarding Kyoto or other possible cuts), in 2090-2099 (as relative to 1980-1999) temperature is expected to rise by 1.8 degrees to 4 degrees and the sea level by 0.18 to 0.59 meter (IPCC 2007, Table SPM-3, 13). The five hundred scientists who contributed to the IPCC Fourth Assessment Report regard as very likely (90% chance to be true) that the steep rise in warming observed over the last fifty years is due to the increase of greenhouse gases concentration in the atmosphere, particularly of CO2, which in 2005 has reached 379 parts per cubic meter (ppm) (IPCC 2007, 2), compared with about 280 ppm in the pre-industrial era; not to consider the contribution of other anthropogenic greenhouse gases such as methane, nitrous oxide, and tropospheric ozone. The larger the changes and the rate of change, the more the adverse effects will predominate over the benefits of warming up the colder areas of the earth, particularly with regard to tropical and subtropical regions, where the cereal crop yield will decrease and water shortage will affect more people and contribute to more heat stress and infectious disease epidemics;on the other handcrop yields will increase in Siberia and Canada and cold-related morbidity and mortality decrease, though this is counterbalanced by the soil erosion brought about by the thawing of permafrost. As to the rising sea level, low-level coastal regions and small islands will be inundated, destroying agricultural land and driving the local population to migration. In a word, even if the physics of climate change is a new field still in need of much development, there are enough serious signs of a link between humankind’s activities and the spreading of global climate change as to justify taking action for the philosophical reasons that will be discussed within the next chapters. I am not going to additionally investigate the reasons for taking action against local warming and pollution, as even in the U.S. states such as California and the New England commonwealths have done for the past several years.

\*\*Advantage CP

Carbon Tax CP

Carbon tax solves warming

Oliver Tickell, March 12th, 2009 (Climate researcher, The Guardian, “Replace Kyoto protocol with global carbon tax, says Yale economist” <http://www.guardian.co.uk/environment/2009/mar/12/carbon-tax-should-replace-kyoto-protocol>

The world should dump the "inefficient and ineffective" Kyoto protocol and replace it with a global carbon tax, leading economist William Nordhaus said yesterday. "To bet the world's climate system on the Kyoto approach is a reckless gamble", he told the climate change congress in Copenhagen. "Taxation is a proven instrument. Taxes may be unpopular, but they work. The Kyoto model is largely untested and the experience we have tells us it will not meet our objective — to stablise the world climate system." This week's meeting of more than 2,000 scientists and policy-makers is intended to lay the groundwork for a major UN summit in Copenhagen in December that hopes to negotiate a new climate treaty to succeed the Kyoto protocol. Nordhaus, professor of economics at Yale university, critricised the Kyoto system in trenchant terms. "The developed countries that have emissions reductions targets account for only half of the world's carbon emissions. Our models show that a 50% non-participation results in a 250% increase in the cost to those who are participating, and this is a huge penalty we can no longer afford." He also attacked the Kyoto protocol's clean development mechanism (CDM), which allows industrialised countries that are not meeting their Kyoto targets to comply by 'buying in' carbon credits from projects in developing countries. "The CDM produces highly opaque instruments which are the climate equivalent of mortgage-backed securities and structured credit derivatives," he said. He proposed that a carbon tax, levied on fossil fuels and transport, would be simple and effective. "It would create a reliable carbon price which would create the incentive we need to shift towards a low-carbon economy. Initially a carbon tax would affect producers, but as the price signal was passed through the economy it would drive the transformation to low-carbon technologies and efficient use of energy at every level." Nordhaus insisted that his tax plan was achievable. "Many countries are very scared of signing up to emissions reductions commitents under the Kyoto protocol because they don't know if they can achieve them and are concerned as to the consequences if they don't. My suggestion is that they should be allowed, as an alternative to emissions targets, to commit to imposing a carbon tax at a minimum level. As a small country I would find this carbon tax model very attractive." Cambridge economist Professor Michael Grubb agreed that "there is no doubt that governments will respond far better to climate change if they believe that there will be a substantial carbon tax in the future that everyone will have to pay". Jacqueline McGlade, director of the European Environment Agency, based in Copenhagen, also backed Nordhaus's plan. "His idea is very sensible. We need to move the burden of taxation away from labour to resources — and tax not just on carbon but other resources such as water to tackle the far wider environmental and resource problems we face."

Carbon Tax Solves Emissions 1/2

Empirically proven - carbon taxes cut emissions

Robert Stavens, May 26th, 2012 (Professor of Business and Government and Director of the Harvard Environmental Economics Program at the Harvard Kennedy School, “Can Market Forces Really be Employed to Address Climate Change?”, http://www.robertstavinsblog.org/?=p=355)

Real-world experience with policies that price externalities has illustrated the effectiveness of market-based instruments. Congestion , and Stockholm have reduced traffic congestion in busy urban centers, lowered air pollution, and delivered net social benefits. Likewise, the British Columbia carbon tax has reduced carbon dioxide emissions since 2008. More prominently, the U.S. sulfur dioxide (SO2) cap-and-trade program has cut SO2 emissions from U.S. power plants by more than 50 percent since 1990, resulting in compliance costs one-half of what they would have been under conventional regulatory mandates. The success of the SO2 allowance trading program motivated the design and implementation of the European Union’s Emissions Trading Scheme (EU ETS), the world’s largest cap-and-trade program, focused on cutting CO2 emissions from power plants and large manufacturing facilities throughout Europe. And the 1980s phasedown of lead in gasoline, which reduced the lead content per gallon of fuel, served as an early, effective example of a tradable performance standard. These positive experiences have provided ample reason to consider market-based instruments – carbon taxes, cap-and-trade, and clean energy standards – as potential approaches charges in London, Singapore to mitigating greenhouse gas emissions.

Carbon taxes spur new tech and reduce emissions

Chi et al., Feb. 23rd, 2012

(Chunjie , Tieju Maa, Bing Zhuc ,East China University of Science and Technology, International Institute for Applied Systems Analysis, Department of Chemical Engineering, Tsinghua University, “Towards a low-carbon economy: Coping with technological bifurcations with a carbon tax” http://www.sciencedirect.com/science/article/pii/S0140988312000394)

Technological learning is understood as an endogenous mechanism for the diffusion of advanced clean energy technologies. Technological learning is quite uncertain. Previous research showed that an optimization model with uncertain technological learning could generate technological bifurcations: various local optimal solutions of technology development strategies with very similar total costs but different environmental impacts. With a simplified energy system optimization model, this paper explores technological bifurcations and the effect of a carbon tax on the development and diffusion of new energy technologies. With a three-stage analysis, the main findings of this paper are (1) that technological learning, instead of its uncertainty, is an essential mechanism for technological bifurcations, and (2) a carbontax can reduce carbon emission but not necessarily technological bifurcations. An implication from these findings is that with a carbon tax, there still could be potential for other policy interventions to reduce carbon emissions without much additional cost.

Carbon taxes solve – they would be imposed on 98% of US emissions

Joseph E. Aldy and Robert N. Stavins October 2011 (NATIONAL BUREAU OF ECONOMIC RESEARCH, “USING THE MARKET TO ADDRESS CLIMATE CHANGE: INSIGHTS FROM THEORY AND EXPERIENCE” http://www.nber.org/papers/w17488.pdf?new\_window=1)

The government could apply the carbon tax at a variety of points in the product cycle of fossil fuels, from fossil fuel suppliers based on the carbon content of fuel sales (“upstream” taxation/regulation) to final emitters at the point of energy generation (“downstream” taxation/regulation).    Under an upstream approach, refineries and importers of petroleum products would pay a tax based on the carbon content of their gasoline, diesel fuel, or heating oil.   Coal‐mine operators would pay a tax reflecting the carbon content of the tons extracted at the mine mouth.   Natural‐gas companies would pay a tax reflecting the carbon content of the gas they bring to surface at the wellhead or import via pipelines or liquefied natural gas (LNG) terminals.   Focusing on the carbon content of fuels enables the design to capture about 98% of U.S. CO2 emissions with a relatively small number of covered firms – on the order of a few thousand – as opposed to the hundreds of millions of smokestacks, tailpipes, etc. that emit CO2 after fossil fuel combustion.   Such a tax approach could also cover other greenhouse gases.

Carbon Tax Solves Emissions 2/2

**Carbon taxes solve emissions**

Alvin Lin and Yang Fuqiang, January 27, 2012 (climate and energy policy director and senior advisor on energy for China at the Natural Resources Defense Council, “China’s carbon tax is very real” <http://www.chinadialogue.net/article/show/single/en/4742>)

The news that China may very soon introduce a carbon tax has caused a stir. Of the many articles to address the topic, John Lee’s Wall Street Journal commentary “China’s Fake Carbon Tax”, published earlier this month, is particularly striking. In this confusing diatribe, Lee puts forward his personal theories about China’s motives. But these have no foundation in reality. Why is China preparing to introduce a carbon tax? Taxing carbon is an effective market-based method for cutting carbon emissions and tackling climate change. Many countries, both developed and developing, are considering a carbon tax, while some have already introduced one. The details of the tax differ from place to place, but the essential aim is the same: Reducing carbon emissions; speeding up the transition to a clean energy economy; promoting energy conservation and renewable energy development; and mobilizing industry enthusiasm for green measures. At the same time as tackling climate change, carbon taxes can bring wider beneﬁts to society. For example, measures to cut carbon emissions also limit the release of other pollutants, and carbon funds can be used to help poor families buy energy-saving domestic appliances and businesses to upgrade to more efficient equipment. China’s approach to developing a carbon tax has been earnest and serious. In mid- 2007, the Ministry of Finance formally listed a carbon tax in its revenue research plan. The government, bringing together top-level research units and the brightest minds, has since undertaken years of research on the topic. Key participating organizations have included the Ministry of Finance’s Research Institute for Fiscal Science, Chinese Academy for Environmental Planning, the National Development and Reform Commission’s Energy Research Institute, and Tsinghua University, among others. Any carbon tax scheme introduced in China must account for the country’s phase of development, the impacts on different industries and consumers, and the need to minimize negative impacts. The government must also choose the most favorable time for implementation. Certainly, China will implement a carbon tax that is based on its own characteristics and conditions.

Carbon taxes would reduce emissions

<http://www.springerlink.com/content/mt7452j23575v16k/fulltext.pdf>

However, as economists studied possible responses to global warming, many came to the conclusion that, despite the political attractiveness of cap-and-trade, a properly valued carbon tax might be a more efficient and effective mechanism to reduce greenhouse gas emissions. (And taxes, of course, are also a market-based mechanism, insofar as they adjust the price of a good or service.) Yale economist William Nordhaus (who ironically was a member of the 1983 NRC study team), argued in several papers over nearly two decades that an appropriately set, revenue neutral carbon tax could be an effective means of reducing greenhouse gas emissions and would likely be more efficient than an emissions stabilization and trading regime (Nordhaus 1993a, b, 1997, 2005, 2006, 2007). Others have made similar arguments (Repetto et al. 1992; Parry et al. 1999; Shackleton et al. 1993; Cooper 2007; Metcalf and Weisbach 2009; see also Pearce 1991, for an early summary of the advantages and disadvantages of carbon taxes versus alternatives; and Stavins 2009, and Krugman 2010 for more recent comparisons). Recently, Nordhaus has made this argument even more emphatically. At a presentation at a major international conference in Copenhagen prior to the 2009 COP 15 meeting, Nordhaus argued that a carbon tax would be the most effective and efficient incentive to shift the world to a low carbon economy. “Taxation is a proven instrument. Taxes may be unpopular, but they work,” he concluded. 2

Carbon Tax Generates Revenue

Carbon taxes create revenue

Jan Imhof Feb 11th, 2011 (Centre for Energy Policy and Economics, Zurich, Switzerland, “Fuel Exemptions, Revenue Recycling, Equity and Eﬃciency:

Evaluating Post-Kyoto Policies for Switzerland” http://www.sgvs.ch/congress11/upload/p\_160-60115.pdf)

Potential adverse distributional outcomes of environmental taxes have been discussed by both policy makers and researchers. A carbon tax changes relative prices of goods and could thus impact various consumers diﬀerently: A household spending relatively more of his income on carbon intensive goods will bear more of the tax burden. Economists who have focused on the expenditure side tend to appraise carbon taxes as being regressive (e.g. Scott and Eakins (2004)). On the other hand carbon taxes create revenue which can be redistributed. If this is taken into account the recycling scheme is crucial to the outcome. Metcalf (1999, 2007) insisted that a green tax reform can lead to almost any desired distributional outcome if the revenue is recycled in the appropriate way. Grainger and Kolstad (2009) show that the recycling of the revenue can oﬀset disproportional eﬀects on households even though carbon taxes are regressive in itself. This domination of the revenue recycling is not surprising, since fuel expenditures are usually only a minor budgetary item.

Carbon Tax Solves Econ

Carbon taxes stimulate the economy

Joseph E. Aldy and Robert N. Stavins October 2011 (NATIONAL BUREAU OF ECONOMIC RESEARCH, “USING THE MARKET TO ADDRESS CLIMATE CHANGE: INSIGHTS FROM THEORY AND EXPERIENCE” http://www.nber.org/papers/w17488.pdf?new\_window=1)

The impact of a carbon tax on emission mitigation and the economy will depend in part on the amount and use of the tax revenue.   An economy‐wide U.S. carbon tax of $20 per ton CO2 would likely raise more than $100 billion per year.   The carbon tax revenue could be put toward innumerable uses.   The revenue could allow for reductions in existing distortionary taxes on labor and capital, thereby stimulating economic activity and offsetting some of a policy’s social costs.   For example, reducing the payroll tax by 2 percentage points in 2012 could be financed with an economy‐wide carbon tax on the order of $15‐20/ton of CO2. Other socially valuable uses of revenue include reduction of debt, and funding desirable public programs, such as research and development of climate‐friendly technology.   The tax receipts could also be used compensate low‐income households for the burden of higher energy prices, as well as compensating others bearing a disproportionate cost of the policy.

Carbon tax lowers emissions, providing long-term economic benefits

Alvin Lin and Yang Fuqiang, January 27, 2012 (climate and energy policy director and senior advisor on energy for China at the Natural Resources Defense Council, “China’s carbon tax is very real” <http://www.chinadialogue.net/article/show/single/en/4742>)

When China, in advance of many developed countries, proposes a carbon tax and prepares to implement it during the 12th Five-Year Plan (2011-2015), it’s hardly surprising that some in the West, recognizing that a carbon tax carries certain economic costs, wonder why. One critic says China wants to increase its “wiggle room” in international climate-change negotiations, “giving it the political cover to emit even more”. But a carbon tax would invigorate emissions reduction efforts and reduce the quantity of emissions. In the early stages, it would increase costs, but the long-term positive effects and economic gains would be greater. Clearly, China’s carbon tax plan should include a grace period for the businesses that will be most seriously affected to allow them to make the necessary changes and protect their competitiveness. During this grace period, a proportion of carbon tax revenue could be used to encourage such ﬁrms to complete the transition

A2 Carbon Tax CP

Carbon taxes fail – markets will just relocate to countries without mitigation policies.

Joseph E. Aldy and Robert N. Stavins October 2011 (NATIONAL BUREAU OF ECONOMIC RESEARCH, “USING THE MARKET TO ADDRESS CLIMATE CHANGE: INSIGHTS FROM THEORY AND EXPERIENCE” http://www.nber.org/papers/w17488.pdf?new\_window=1)

The implementation of a carbon tax (or cap‐and‐trade system) will increase the cost of consuming energy and could adversely affect the competitiveness of energy‐intensive industries.   This competitiveness effect can result in negative economic and environmental outcomes: firms may relocate facilities to countries without meaningful climate change policies, thereby increasing emissions in these new locations and offsetting some of the environmental benefits of the policy.   This so‐called “emission leakage” may actually be relatively modest, because a majority of the emissions in developed countries occur in non‐traded sectors, such as electricity, transportation, and residential buildings.   However, energy‐intensive manufacturing industries that produce goods competing in international markets may face incentives to relocate.

Turn, reduction in consumption causes other countries without mitigation policies to consume more

Joseph E. Aldy and Robert N. Stavins October 2011 (NATIONAL BUREAU OF ECONOMIC RESEARCH, “USING THE MARKET TO ADDRESS CLIMATE CHANGE: INSIGHTS FROM THEORY AND EXPERIENCE” http://www.nber.org/papers/w17488.pdf?new\_window=1)

Additional emission leakage may occur through international energy markets – as countries with climate policies reduce their consumption of fossil fuels and drive down fuel prices, those countries without emission mitigation policies may be induced to increase their consumption.    Since leakage undermines the environmental effectiveness of any unilateral effort to mitigate emissions, international cooperation and coordination becomes all the more important.    These competitiveness impacts on energy‐intensive manufacturing could be mitigated through policy designs we discuss below.

Carbon taxes will initiate trade-off wars- China, India, and other nations won’t curb emissions

Lewis '10 - Senior Fellow at the Competitive Enterprise Institute

[Marlo, "The Department of Defense Should Assess the Security Risks of Climate Change Policies", April 20, http://cei.org/cei\_files/fm/active/0/On%20Point%20-%20Marlo%20Lewis%20-%20Climate%20Change%20and%20National%20Security%20-%20FINAL.pdf, DOA: 6-29-12]

China, India, and other developing countries reject binding limits on their emissions. What would be required to make them join the carbon-constrained club? One option is outright bribery.38 At the Copenhagen climate summit, President Obama pledged to work with other industrial countries to provide $100 billion annually in climate assistance to developing countries by 2020. 39 However, U.S. taxpayers may take a dim view of subsidizing Chinese industry. Besides, although China and India would be only too happy to take our money, they have not indicated they would return the favor by capping their emissions. If carrots do not work, the other option is sticks. Ten U.S. Senators, 40 French President Nicolas Sarkozy, 41and others 42 advocate carbon tariffs against major developing countries that refuse to curb emissions. If we go down that path, we will likely butt heads with China and other important trade partners. Beijing has already threatened to retaliate against carbon tariffs with trade sanctions of its own.43 In all likelihood we would get a trade war, not compliance. Trade wars do not usually lead to shooting wars, but an era of trade conflict with China would not be in the U.S. national interest. China, for example, could become less amenable (or more 6 obstructionist) in areas where we seek their cooperation, such as sharing intelligence on terrorist activities and restraining North Korea and Iran’s nuclear ambitions.

\*\*A2 Solvency

Warming Inevitable

Climate Change is inevitable

Walker ‘8, PhD, and King

(Gabrielle, PhD in Chemistry, Sir David, Professor @ Oxford and Director of the Smith School of Enterprise and the Environment at the University of Oxford, and a senior scientific adviser to UBS, The Hot Topic, pg. 47)

Most people have now realized that climate change is upon us. If pushed, most would probably also say that if we don’t do something to change the way we live, things are likely to get worse. But few seem to have noticed one of the most important points to emerge from the last few years of scientific projections. All the evidence suggests that the world will experience significant and potentially highly dangerous changes in climate over the next few decades no matter what we do now.

Heat waves would happen even without warming

Michaels and Balling ‘9

(Patrick, professor of environmental sciences @ The University of Virginia and a senior fellow in the environmental studies at the CATO institute; Robert, professor in the climatology program in the School of Geographical Sciences at @ASU. “Climate of Extremes: Global Warming Science They Don’t Want You to Know” pgs 178-180)

Chase et al. also examined the trends in the data over the 25 years and reported:” Analyses do not provide strong support for the idea that regional heat or cold waves are significantly increasing or decreasing with time during the period considered here (1979-2003).” In other words, heat waves like the one in Europe in 2003 can and will occur by chance even if temperature does not rise or the variability of temperature does not change. There is no question that the heat wave of 2003 was a natural disaster in Europe with a substantial loss of human life. Europe was not prepared for an even that, from a purely statistical view point, was inevitable, with or without global warming.

CO2 do not have correlation with sea levels- CO2 emissions increased yet sea levels did not

Idso and Idso ‘7

[Sherwood, Research Physicist @ US Water Conservation laboratory, and Craig, President of Center for the Study of Carbon Dioxide and Global change and PhD in Geography, “Carbon Dioxide and Global Change: Separating Scientific Fact from Personal Opinion”, 6-6, http://www.co2science.org/education/reports/hansen/HansenTestimonyCritique.pdf, DOA:6-29-12]

These observations lead us to wonder why late 20th-century global warming – which climate alarmists describe as having been unprecedented over the past two millennia or more – barely makes a ripple in the global sea level data of the two preceding figures. We are even more intrigued about the matter in light of the fact that the warming that brought an end to the Little Ice Age is readily apparent in the first, and even the second, of the three upward-trending segments of Jevrejeva et al.’s gsl rate history. Likewise, we are perplexed by the fact that the rising atmospheric CO2 concentration – which climate alarmists contend was responsible for the “unprecedented” global warming of the late 20th century – experienced a dramatic increase in its rate of rise just after 1950 (shifting from a 1900-1950 mean rate-of-rise of 0.33 ppm/year to a 1950-2000 mean rate-of-rise of 1.17 ppm/year, which is a good three and a half times greater ), yet the mean global sea level rate of rise did not trend upwards after 1950, nor has it subsequently exceeded its 1950 rate-of-rise, which means that something is very wrong with the climate-alarmist theory espoused by Hansen and his dozens of collaborators.

Alt Causes 1/2

China is the largest contributor to global warming

Reuters, June 11, 2012 (The Guardian“Climate change rate could be faster than thought, study suggests”, http://www.guardian.co.uk/environment/2012/jun/11/climate-change-china-carbon-emissions)

China's carbon emissions could be nearly 20% higher than previously thought, a new analysis of official Chinese data showed on Sunday, suggesting the pace of global climate change could be even faster than currently predicted. China has already overtaken the US as the world's top greenhouse gas polluter, producing about a quarter of mankind's carbon pollution that scientists say is heating the planet and triggering more extreme weather.

**Construction industry generates more of the global output of greenhouse gases**

Utama et al. 11

(Nuki Agya Utama, Keiichi N. Ishihara, Tetsuo Tezuka, and Qi Zhang are researchers at the Graduate School Energy Science in Kyoto University in Kyoto Japan and Miguel Esteban is part of the Graduate School Civil and Environmental at Waseda university in Tokyo Japan; “Transportation’s Impact Assessment on Construction Sector”; June-Aug, 2011)

Globally the construction industry is a major contributor to socio-economic development and also a major user of energy and natural resources. The construction industry consumes 40% of the materials entering the global e-conomy and generates 40% - 50% of the global output of greenhouse gases and the agents of acid rain.

Natural gas leaks contribute to a third of warming

REVKIN and KRAUSS ‘9(ANDREW C. REVKIN and CLIFFORD KRAUSS, correspondents for the New York Times, Oct. 14, 2009, “Curbing Emissions by Sealing Gas Leaks”, http://www.nytimes.com/2009/10/15/business/energy-environment/15degrees.html?\_r=1)

To the naked eye, there was nothing to be seen at a natural gas well in eastern Texas but beige pipes and tanks baking in the sun. “Holy smoke, it’s blowing like mad,” said Mr. Gosney, an environmental field coordinator for EnCana, the Canadian gas producer that operates the year-old well near Franklin, Tex. “It does look nasty.” Within a few days the leaks had been sealed by workers. Efforts like EnCana’s save energy and money. Yet they are also a cheap, effective way of blunting climate change that could potentially be replicated thousands of times over, from Wyoming to Siberia, energy experts say. Natural gas consists almost entirely of methane, a potent heat-trapping gas that scientists say accounts for as much as a third of the human contribution to global warming. “This for me is an absolute no-brainer, even more so than putting in those compact fluorescent bulbs in your house,” said Al Armendariz, an engineer at Southern Methodist University who studies pollutants from oil and gas fields. Acting quickly to stanch the loss of methane could substantially cut warming in the short run, even as countries tackle the tougher challenge of cutting the dominant greenhouse emission, carbon dioxide, studies by researchers at the Massachusetts Institute of Technology suggest. Unlike carbon dioxide, which can remain in the atmosphere a century or more once released, methane persists in the air for about 10 years. So aggressively reining in emissions now would mean that far less of the gas would be warming the earth in a decade or so. Methane is also a valuable target because while it is far rarer and more fleeting than carbon dioxide, ton for ton, it traps 25 times as much heat, researchers say. Yet while federal and international programs have encouraged companies to seek and curb methane emissions from gas and oil wells, pipelines and tanks, aggressive efforts like EnCana’s are still far from the industry norm. As a result, some three trillion cubic feet of methane leak into the air every year, with Russia and the United States the leading sources, according to the Environmental Protection Agency’s official estimate. (This amount has the warming power of emissions from over half the coal plants in the United States.) And government scientists and industry officials caution that the real figure is almost certainly higher. Unless monitoring is greatly expanded, they say, such emissions could soar as global production of natural gas increases over the next few decades.

Alt Causes 2/2

Natural gas leaks are worse than squo co2 emissions

Harvey 1/3/12

(Hay Harvey is the president and founder of the Energy Foundation and the founder of Climate Works Foundation and environment program director at the William and Flora Hewlett Foundation, “Natural gas: Cheap, clean and risky”, *LA TIMES*, http://articles.latimes.com/2012/jan/03/opinion/la-oe-harvey-natural-gas-20120103, DOA: 7-1-12)

On the face of it, natural gas looks terrific. The United States — and many other countries — have abundant domestic supplies. The cost, per delivered unit of energy, is about a third of that of oil. It is cheap and fast to build power plants fueled by natural gas. And when burned, it emits only half as much carbon as coal. So what's not to like? Well, things are not so simple. Under the best conditions, we may enjoy those benefits, but under more adverse conditions, gas can be a worse generator of greenhouse gas than coal, can wreak massive local environmental destruction and can undermine energy efficiency and renewable energy. And without a strong set of policies to guide natural gas development, the worst case is far more likely. Start with climate change: Generating a kilowatt-hour's worth of electricity with a natural gas turbine emits only about half as much CO2 as generating the same electricity at a coal plant. Half-off is pretty good. But unburned natural gas turns out to be a very powerful greenhouse gas: One molecule of leaked gas contributes as much to global warming as 25 molecules of burned gas. That means that if the system for the exploration, extraction, compression, piping and burning of natural gas leaks by even 2.5%, it is as bad as coal. So, how much does the gas system leak? No one knows: Estimates range from 1.5% to as high as 8%. Even near the low end of that range, gas can be as bad as coal. And whatever the leaks in the U.S. system, it is likely to be far worse in, say, Russia.

Fossil Fuels are not the only causes of CO2 emissions in the environment- deforestation and decomposition of trees contribute

Barbalace ’06

[Roberta, Professor & Environment Consultation, “CO2 Pollution and Global Warming: When does carbon dioxide become a pollutant?”, http://environmentalchemistry.com/yogi/environmental/200611CO2globalwarming.html, Nov 7, DOA:7-1-12]

When trees die and decompose, CO2 is released. This is part of the normal carbon cycle. When trees are cut down and used for fuel, the CO2 is also released. The rate at which CO2 is released as a result of using trees for fuel is increased. However, when trees are used for building construction, furniture, etc, the carbon is not released rapidly into the environment. One would suspect then that harvesting trees for this purpose would result in less CO2 release into the atmosphere for any given period. That might be correct, except that the tropical forests are being depleted, and with a reduction in vegetation, there is a reduction in photosynthesis. As a result, the carbon cycle is interrupted and the CO2 is not being converted into sugars and oxygen. CO2 accumulates. According to University of Maryland researchers (3), the UN reported that deforestation had decreased between 1980s and the 1990s, when, in fact, it had increased, and the CO2 emissions from deforestation had increased. If CO2 is increased due to deforestation, one would expect the oxygen level to decrease as a result of decreased photosynthesis.

A2 CO2 Reductions Solve

Small reductions in CO2 don’t solve

Inman 3-14-12

(Mason Inman is a journalist who reports especially about climate change and energy for National Geographic News; “Natural Gas a Weak Weapon Against Climate Change, New Study Asserts”, March 14, 2012, http://news.nationalgeographic.com/news/energy/2012/03/120314-natural-gas-global-warming-study/, DOA: 7-1-12)

The world currently has enough coal-fired power plants to produce about one terawatt of electricity—the equivalent to each of the seven billion people on Earth using two 75-watt light bulbs at the same time. In their study published in February in Environmental Research Letters, Myhrvold and Caldeira looked at switching from one terawatt of coal power plants to natural gas-or to solar panels, or wind, or nuclear, or other options. And they tested the effects of making the whole transition in one year—a pace Myhrvold called "insane"—or over as long as a "leisurely" 100-year span. "We found some really counterintuitive results," Myhrvold said. Compared to emissions from coal, "cutting emissions by a factor of two or three hardly makes a difference," he said. To avoid a significant amount of warming this century, he added, "you must cut emissions by a dramatic factor"—by ten or twenty times. If over the course of 40 years the world switched all the coal power plants over to natural gas, generating half as much greenhouse gas per watt-hour of electricity, then the warming would slow—but only by a small fraction. In the natural gas scenario, the study calculated a range of warming trajectories for warming 100 years from now, with temperatures 17 to 25 percent lower than they would be if the world stuck with coal.

Only alternatives with near-zero emissions can solve

Inman 3-14-12

(Mason Inman is a journalist who reports especially about climate change and energy for National Geographic News; “Natural Gas a Weak Weapon Against Climate Change, New Study Asserts”, March 14, 2012, http://news.nationalgeographic.com/news/energy/2012/03/120314-natural-gas-global-warming-study/, DOA: 7-1-12)

But the cut in the warming trajectory was far sharper for a switch to energy sources with near-zero emissions—such as nuclear, wind, or solar energy. The reduction in the temperature increase was 57 to 81 percent, according to the study models. In reality, the world faces an even more daunting challenge than that outlined in the study, which assumed that future electricity use would stay at today's levels. Almost universally, projections call for the world's electricity demand to increase in the next century. (See "IEA Outlook: Time Running Out on Climate Change") "It's got to be a little depressing," Myhrvold admitted. But, he added, "It's really important from a policy perspective to understand what the dimensions of the problem are.” The results surprised even Caldeira, who specializes in climate change, and has studied how carbon dioxide from fossil fuels will likely linger in the atmosphere for a very long time—about a quarter of it remaining aloft for more than a thousand years. This was "kind of obvious when you think about it, but I hadn't realized," Caldeira said. Caldeira sees the results as "a Rorschach test," which he expects people will read in one of two ways. "You can say we need to go for the lowest emissions, and do it now," he said, "or you may throw your hands up in despair."

A2 China Key

The US has the largest carbon footprint in the world

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA:7-1-12)

Do these things seem trivial? They are not. Americans have the largest “carbon footprint” in the world. A carbon footprint is the amount of carbon emissions that is necessary to support everything we do, whether it is our direct energy use or the energy used to produce the things we buy. The average American produces about 30 times as much carbon dioxide as the average person in Bangladesh by such measurements. So what Americans do with our energy and resources has a much larger impact on the world than what anybody else does with theirs—even more so than most European nations.

\*\*Real

Warming is Real

Warming is real – short and long term evidence proves

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA: 7-1-12)

We have both short-range and long-range ways to know global warming is occurring.(1) [Slide 16] Short-range. Direct measurements with thermometers indicate that the Earth has been warming up since the late nineteenth century. Of course, there were thermometers before then; Thomas Jefferson had one at the Continental Congress in 1776. But the thermometers were mostly in the cities of Europe and North America. You cannot generalize about the whole Earth from those few thermometers. But starting about 1856 both the American and British navies began keeping temperature records from all over the world (almost). The average of these global temperature readings indicates that global temperature has increased. Global temperature goes up and down and up and down, but it has gone up more than it has gone down. Sometimes it seems to level off, while at other times it increases rapidly.The data are very clear. The hottest years on record, in terms of global temperature, are, in descending order, 2010, 2005, 1998, 2003, and 2006. Notice that 2010 was the year when Moscow had weeks of 100+ degree weather. In Oklahoma, it was 2011, but for most of the world 2011 was not as hot as 2010.[Slide 17] Some anti-global-warming sites present graphs to show that no global warming is occurring. They like to choose short time periods during which global temperatures have leveled off, and ignore the longer time periods when they have increased.(2) [Slide 18] Long-range. The best long-range temperature indicator is the record from the ice cores. For about a half million years, snow has piled up and become ice in Greenland and Antarctica. Scientists drill great distances down into the ice in these two places, and pull up cores of ice. In these cores you can see the layers of ice, each of which represents one year’s worth of snow. You can count down from the top and know exactly how old the layer of ice is. There are two things you can learnfrom each layer of ice. First, by analyzing the oxygen isotope ratio, you can estimate global temperature. Second, there are bubbles of air trapped in the layers. These are actual air samples from hundreds of thousands of years ago. You can actually measure how much carbon dioxide these bubbles contain.

Warming is Anthropogenic

Global warming is caused by humans

Nicholas Smith and Anthony Leiserowitz April 4th, 2012

(Yale University, “The Rise of Global Warming Skepticism: Exploring Affective Image Associations in the United States Over Time”doi: 10.1111/j.1539-6924.2012.01801.x, DOA:7-1-12)

Global warming is one of the most pressing problems facing the world. Although the average surface temperature of the Earth fluctuates naturally on geological timescales, temperature increases over the past century are widely regarded as human caused. The 2007 Intergovernmental Panel on Climate Change (IPCC) scientific assessment report established a 90% level of certainty that this warming is anthropogenic and primarily linked to industrial processes.(1) Substantial mitigation of greenhouse gas emissions is therefore required if “dangerous” anthropogenic impacts are to be minimized.

Global warming is existent and anthropogenic

Cerutti 07

(Furio Cerutti is an Italian philosopher who works on the theory of global challenges including global warming and international relations; *Global Challenges for Leviathan: A Political Philosophy of Nuclear Weapons and Global Warming;* Lexington Books: 2007; pgs. 106-7)

Climate Change has always existed, as have global warming and globalcooling and , needless to say greenhouse gases, the very pre-condition for life to be possible on this planet. By “climate change” we presently mean more specifically a set of phenomena, such as global average air and ocean temperature rise as well as rise of the sea level, precipitation change, droughts, and floods that can impinge on essential aspects of our life on earth: food and water resources, ecosystem and biodiversity, human settlements, and human health. There is now enough evidence, as we shall soon see, that much of the warming observed particularly over the last fifty years is attributable to human activities, particularly fossil fuel use and land use change, solar variation and sulfate aerosols accounting for the rest. In this I am strictly following the IPCC Third Assessment Report (IPCC 2001, 3), or the first part (out of three) if the Fourth Assessment of 2007, which deals with the physics of climate change and was released shortly before this book went to press. I am relying on these authoritative documents of UN-sponsored Intergovernmental Panel on Climate Change, a highly institutionalized epistemic community, because they strike a reasonable and publicly tested balance between different views of the present situation, the casual explanations, and the expected developments. Where no decisive and definitive scientific evidence and explanation are available, which is often the case in a new science like climatology, only a: “negotiated assessment” (Young 2002) is possible, best if reached by transparent, broad-based, and public debate like in the IPCC case, a circumstance that somehow resonates with the consensus theory of truth debated in philosophy in the last decades. On this ground and in the context of this book I do not see the necessity to debate the harsh, but mostly poorly argued criticism (se however note 3) which in some corner has been brought against the theory of global warming now prevailing in the worldwide scientific community.

We cause global warming with our fossil-fuel use

David 10

(Laurie David is an American environmental activist, a trustee on the Natural Resources Defense Council; *Stop Global Warming: The Solution Is You! an Activist's Guide: Easyread Large Edition,* Accessible Publishing Systems PTY, Ltd. 2008, pg. 21)

We are the cause of global warming. We didn’t do this intentionally, but we know now that our way of life is causing global warming to happen. Power plants and cars, factories and buildings, the way we live, the way we work, the way we play, charging our cell phones and iPods, running our dishwashers and washing machines- all our fossil-fuel energy use contributes to global warming.

There is Scientific Consensus that Anthropogenic global warming is real and caused by GHG

Oreskes ’04

(Naomi is a member of the Department of History and Science Studies Program , University of California, and a Science Magazine, Dec 3, “The Scientific Consensus on Climate Change”, http://www.sciencemag.org/cgi/content/full/306/5702/1686, DOA:6-30-12)

The scientific consensus is clearly expressed in the reports of the Intergovernmental Panel on Climate Change (IPCC). Created in 1988 by the World Meteorological Organization and the United Nations Environmental Programme, IPCC's purpose is to evaluate the state of climate science as a basis for informed policy action, primarily on the basis of peer-reviewed and published scientific literature (3). In its most recent assessment, IPCC states unequivocally that the consensus of scientific opinion is that Earth's climate is being affected by human activities: “Human activities … are modifying the concentration of atmospheric constituents … that absorb or scatter radiant energy. …[M]ost of the observed warming over the last 50 years is likely to have been due to the increase in greenhouse gas concentrations”.

CO2 → Warming 1/2

Warming is caused by CO2 emitted from fossil fuels

Cook 10(John, Climate Change Communication Fellow for the Global Change Institute at the University of Queensland, Skeptical Science,“10 Indicators of a Human Fingerprint on Climate Change”, http://www.skepticalscience.com/news.php?n=292)

The NOAA State of the Climate 2009 report is an excellent summary of the many lines of evidence that global warming is happening. Acknowledging the fact that the planet is warming leads to the all important question - what's causing global warming? To answer this, here is a summary of the empirical evidence that answer this question. Many different observations find a distinct human fingerprint on climate change: To get a closer look, click on the pic above to get a high-rez 1024x768 version (you're all welcome to use this graphic in your Powerpoint presentations). Or to dig even deeper, here's more info on each indicator (including links to the original data or peer-reviewed research): 1. Humans are currently emitting around 30 billion tonnes of CO2 into the atmosphere every year (CDIAC). Of course, it could be coincidence that CO2 levels are rising so sharply at the same time so let's look at more evidence that we're responsible for the rise in CO2 levels. 2. When we measure the type of carbon accumulating in the atmosphere, we observe more of the type of carbon that comes from fossil fuels (Manning 2006). 3. This is corroborated by measurements of oxygen in the atmosphere. Oxygen levels are falling in line with the amount of carbon dioxide rising, just as you'd expect from fossil fuel burning which takes oxygen out of the air to create carbon dioxide (Manning 2006). 4. Further independent evidence that humans are raising CO2 levels comes from measurements of carbon found in coral records going back several centuries. These find a recent sharp rise in the type of carbon that comes from fossil fuels (Pelejero 2005). 5. So we know humans are raising CO2 levels. What's the effect? Satellites measure less heat escaping out to space, at the particular wavelengths that CO2 absorbs heat, thus finding "direct experimental evidence for a significant increase in the Earth's greenhouse effect". (Harries 2001, Griggs 2004, Chen 2007). 6. If less heat is escaping to space, where is it going? Back to the Earth's surface. Surface measurements confirm this, observing more downward infrared radiation (Philipona 2004, Wang 2009). A closer look at the downward radiation finds more heat returning at CO2 wavelengths, leading to the conclusion that "this experimental data should effectively end the argument by skeptics that no experimental evidence exists for the connection between greenhouse gas increases in the atmosphere and global warming." (Evans 2006). 7. If an increased greenhouse effect is causing global warming, we should see certain patterns in the warming. For example, the planet should warm faster at night than during the day. This is indeed being observed (Braganza 2004, Alexander 2006). 8. Another distinctive pattern of greenhouse warming is cooling in the upper atmosphere, otherwise known as the stratosphere. This is exactly what's happening (Jones 2003). 9. With the lower atmosphere (the troposphere) warming and the upper atmosphere (the stratosphere) cooling, another consequence is the boundary between the troposphere and stratosphere, otherwise known as the tropopause, should rise as a consequence of greenhouse warming. This has been observed (Santer 2003). 10. An even higher layer of the atmosphere, the ionosphere, is expected to cool and contract in response to greenhouse warming. This has been observed by satellites (Laštovi?ka 2006). Science isn't a house of cards, ready to topple if you remove one line of evidence. Instead, it's like a jigsaw puzzle. As the body of evidence builds, we get a clearer picture of what's driving our climate. We now have many lines of evidence all pointing to a single, consistent answer - the main driver of global warming is rising carbon dioxide levels from our fossil fuel burning.

CO2 is making global warming worse; twenty times sun is

Stanley Rice May 17th, 2012

(Professor of Biological Sciences at Southeastern Oklahoma State University, “GLOBAL WARMING, GLOBAL DISRUPTION”, http://stanleyrice.com/presentations/Global\_Warming\_May\_2012.pdf, DOA: 7-1-12)

Now, you may have noticed something else. A half million years ago, even a few thousand years ago, there were no farms or factories or cars. So what accounts for the correlation of carbon dioxide and temperature? Who’s in charge—does carbon dioxide cause global warming, or does global warming cause carbon dioxide? I put this question to Maureen Raymo, a climatologist who spoke at the AAAS meetinghere in Tulsa in 2009. And she said each one caused the other. It works both ways. Carbon dioxide holds in the heat, but the heat then enhances carbon dioxide production, mainly through the decomposition of dead stuff in the soil. This helps to explain a long-standing mystery about the ice ages. The change in sunlight intensity caused by the movement of the Earth relative to the Sun is very slight—how could such a slight change cause the huge temperature changes of the ice ages? Well, what happened was that a slight increase in sunlight warmed the Earth just enough that vegetation started rotting faster, the carbon dioxide from which enhanced global warming. That’s what happened 20,000 years ago. Today, it appears to be carbon dioxide from human activity that is enhancing global warming, twenty times as much as sunlight is.

CO2 → Warming 2/2

Global warming is caused by CO2 and temperatures are rising

Cerutti 07

(Furio Cerutti is an Italian philosopher who works on the theory of global challenges including global warming and international relations; *Global Challenges for Leviathan: A Political Philosophy of Nuclear Weapons and Global Warming;* Lexington Books: 2007; pgs. 107)

A first real challenge for humankind lies in what may happen in the near future, that is the time form now to 2100, to which most of the IPCC forecasts are limited. For all of the socio-economic scenarios taken into consideration and the resulting emissions (disregarding Kyoto or other possible cuts), in 2090-2099 (as relative to 1980-1999) temperature is expected to rise by 1.8 degrees to 4 degrees and the sea level by 0.18 to 0.59 meter (IPCC 2007, Table SPM-3, 13). The five hundredscientists who contributed to the IPCC Fourth Assessment Report regard as very likely (90% chance to be true) that the steep rise in warming observed over the last fifty years is due to the increase of greenhouse gases concentration in the atmosphere, particularly of CO2, which in 2005 has reached 379 parts per cubic meter (ppm) (IPCC 2007, 2), compared with about 280 ppm in the pre-industrial era; not to consider the contribution of other anthropogenic greenhouse gases such as methane, nitrous oxide, and tropospheric ozone. The larger the changes and the rate of change, the more the adverse effects will predominate over the benefits of warming up the colder areas of the earth, particularly with regard to tropical and subtropical regions, where the cereal crop yield will decrease and water shortage will affect more people and contribute to more heat stress and infectious disease epidemics; on the other hand crop yields will increase in Siberia and Canada and cold-related morbidity and mortality decrease, though this is counterbalanced by the soil erosion brought about by the thawing of permafrost. AS to the rising sea level, low-level coastal regions and small islands will be inundated, destroying agricultural land and driving the local population to migration. In a word, even if the physics of climate change is a new field still in need of much development, there are enough serious signs of a link between humankind’s activities and the spreading of global climate change as to justify taking action for the philosophical reasons that will be discussed within the next chapters. I am not going to additionally investigate the reasons for taking action against local warming and pollution, as even in the U.S. states such as California and the New England commonwealths have done for the past several years.

CO2 emissions trap heat causing warming- has been happening since the Industrial Revolution

McKibben 07

(Bill McKibben is a best-selling author who is an American environmentalist and a Schumann Distinguished Scholar at Middlebury College; *Fight Global Warming Now: The Handbook for Taking Action in Your Community*, Macmillan: Oct. 16, 2007, pgs. 2-3)

It’s important to reduce carbon dioxide because its molecular structure traps hear that would otherwise radiate back out to space. It’s like an invisible blanket in the atmosphere or the panes if greenhouse. There’s always been some carbon in the atmosphere, which is a good thing- without it, the world would get very cold. But ever since the start of the Industrial Revolution , when we began to burn fossil fuels in large quantities, the amount has been increasing. There’s more of it in the atmosphere now than there has been for millions of years.

CO2 is a significant factor for global warming

Filho 10

(Walter Leal Filho is a professor with a first class degree in Biology and a PhD in environmental science, a chartered biologist, and a registered European Biologists, and the creator of International Climate Change Information Programme (ICCIP); *The Economic, Social and Political Elements of Climate Change*, Springer: Dec. 3, 2010, pgs. 607)

In our interview study, CO2 is cited as being the most important cause of global warming by both scientists and students. Thus, the focus of our interviews was on the emission and fixation of CO2 in the global carbon cycle. Our results underline the findings of Hildebrandt (2006), who has shown that learners’ conceptions of the biogeochemical processes of the global carbon cycle are different to scientists’ conceptions. Metaphor analysis shows that students as well as scientists refer to a container-flow schema. In this schema, carbon is stored in different containers (e.g. fossil carbon, land, oceans, atmosphere) connected by bidirectional flows of carbon caused by varying processes (e.g. photosynthesis, burning, respiration). Thus, the container schema and the source-path-goal schema (Lakoff and Johnson 1999) are combined into the larger complex container-flow schema (cf. Fig. 37.2). In the following section, this schema is used to interpret conceptions of carbon flows.

A2 Warming Inevitable

We can solve warming if we act now

David 10

(Laurie David is an American environmental activist, a trustee on the Natural Resources Defense Council; *Stop Global Warming: The Solution Is You! an Activist's Guide: Easyread Large Edition,* Accessible Publishing Systems PTY, Ltd. 2008, pg. 12)

We can solve this. Okay, I’m in, I get it… but how can I possibly do something so huge a problem? AL Gore addressed that sentiment beautifully in the film *An Inconvenient Truth:* “A lot of people go straight from denial to despair without pausing in the middle and doing something about it.” And the middle is where we are right now. We can no longer sit back and hope that someone else is going to solve this for us, because if they were going to do something to stop global warming, we would already have tougher fuel-economy standards (even China has higher- mileage cars than we do); we wouldn’t have an energy policy that continues to subsidize the pollution industries of oil and coal instead of the industries of oil and coal instead of the industries that need the incentives, such as wind, solar, and other promising renewable resources; we wouldn’t be selling off our national forests to the highest-bidding developer or destroying what little wetlands sure would have come in handy as a protective barrier in Louisiana during Hurricane Katrina. Wetlands act like sponges to storm surges, soaking up their power so that by the time they reach inland population center, their damaging winds and heavy rains are weakened significantly. Since 1930, almost 2,000 square miles of the Louisiana Delta have eroded away, and coastal Louisiana continues to disappear at a rate of 25 to 35 square miles annually- that’s literally a football field every hour. We have an administration that releases censored and edited reports on “climate change” (the White House’s preferred term since a pollster advised them that it sounded less scary), and the American people continue to be misinformed and unconcerned . The chairman of the Environment and Public Works Committee in the United States Senate, James Inhofe (R-OK), uses every opportunity to spout that “global warming is a hoax,” completely ignoring the conclusions of the federal government’s own scientists, including NASA, the Environmental Protection Agency, the National Oceanic and Atmospheric Administration, and the National Oceanic and Atmospheric Administration, and the National Academy of Sciences. *Can you believe* this guy is chairing the committee!

Global warming is not inevitable- research shows that avoiding GHG emissions is not impossible

Schafer 12

(Werner Schafer is emeritus professor at Max-Planck Institute for Virusforschung in Germany and worked as the director of Department of Medical Biology for who wrote this thesis for University of St. Gallen, School of management, Economics, Law, Social Sciences and International Affairs, “Advancing Ambition: Interests and Arguments in EU Climate Policy-Making”, Peter Lang: 2012, http://verdi.unisg.ch/www/edis.nsf/SysLkpByIdentifier/3976/$FILE/dis3976.pdf, pg 17, DOA: 6-30-12).

Most climate scientists today agree that the world is getting warmer and that human activities are to blame for this fact (e.g. Bolin 2008, Dessler/Parson 2006, IPCC 2007, Richardson et al. 2009). While the precise impacts of rising global temperatures are highly uncertain, they may be catastrophic. Sea-levels could rise. Islands could disappear. More frequent and more severe extreme weather events might cause enormous damages. Heat waves or storms might interrupt global food production. Yet global warming is not inevitable: economic research suggests that avoiding dangerous climate change through the mitigation of greenhouse gas (GHG) emissions would be costly, but not crippling to global growth or prosperity. Estimates range from one to at most a few percent of global GDP (e.g. Enkvist et al. 2007, Helm 2009a, Hepburn/Stern 2009, IEA 2007, McKinsey 2009, Stern 2007, Weyant 2008). 1 So far, however, the political response to climate change has been limited. Neither individually nor collectively have the world’s governments agreed to or implemented policies to lower GHG emissions in a way that is compatible with a long-term stabilization of the global climate. This raises the overarching question underlying this book: why has there been such a limited political response to climate change in the past and how might ambitious emission reduction policies become politically feasible?

Warming is not inevitable- We can solve using renewables

Wood Hole Research Center 06

(Wood Hole Research Center is a research facility in Massachusetts whose mission is to discover better solutions to solve in environmental and economic challenges through research and education of the Earth; “The ground we walk on: It's part of global warming; Accelerated warming is not inevitable, but changing our course requires mindfulness”, April 21, 2006, http://www.whrc.org/resources/essays/pdf/2006-04-Davidson-CSM-Op-Ed.pdf, DOA: 6-30-12).

Accelerated warming is not inevitable, however. We could slow or reverse the process by making more efficient use of coal, oil, and gas and by increasing renewable sources of energy, such as wind power, solar energy, and biofuels. Just as kids can be trained to wipe their feet to keep dirt off of the carpet (at least most of the time), we could also train ourselves to curb our voracious appetite for burning fossil fuel. Mom’s wrath may suffice to keep dirt off the carpet, but we adults will most likely need strong economic incentives o learn to conserve energy in our cars, homes, offices, andindustries. What a great lesson it would be for our kids, and one that they would thank us for the rest of their lives, if we kept global warming under control and kept the dirt and soil carbon where it belongs.

\*\*Not Real

No Warming 1/2

The fear of Global warming is an obsession- It is not real

Spencer’8

[Roy W, Ph.D. in meteorology at the University of Wisconsin-Madison in 1981, Climatologist and a Principal Research Scientist for the University of Alabama in Huntsville, former Senior Scientist for Climate Studies at NASA’s Marshall Space Flight Center, where he and Dr. John Christy received NASA’s Exceptional Scientific Achievement Medal for their global temperature monitoring work with satellites, “Climate Confusion”, pg. 2]

But now, the western world’s fear of global warming and its effects has reached the point of being an obsession. The media is more than willing to spread, and even amplify, the fear that humanity is filling up the Earth, pushing it beyond its ability to sustain us. Nature is suffering as a result of our sins, and humans are now being increasingly blamed for every hurricane, tornado, tsunami, earthquake, flood, and drought that occurs. Art Bell’s popular book *The Coming Global Superstorm* and its movie spin0off, *The Day After Tomorrow,* are good examples of the public’s fascination with fears of global climate catastrophes. I would say that the coming global superstorm has already arrived- but it is a storm of hype and hysteria. I believe that the environmental fears that have consumed the western world stem from two central beliefs. The first is that the Earth is fragile and needs to be protected, even to the detriment of humans is necessary. Many people feel like the climate system is being pushed beyond its limits, past some imaginary tipping point from which there will be no return. The second belief is that the increasing wealth of nations is bad for the environment. Since technology and our desire for more stuff are to blame for environmental problems, we should renounce our modern lifestyle.

Temperatures from the time for Roman and Medieval times were worse than present temperatures

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 143-4)

Kalnay and Cai’s work identifies a global problem of separating real climate warming from humanity’s extensive land use changes and city-building. Their conclusion endorses the tree rings, mountain tree lines and other proxies which tell us the recent Modern Warm has been less extreme than the alarmists believe- and that the Roman Warming and the Medieval Warming were warmer that today.

If global warming theory was true, the Arctic temperatures would be increasing instead of cooling

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 109)

If the greenhouse theory were valid, temperatures in the Arctic and the Antarctic would have risen several degrees Celsius since 1940 due to the huge emissions of man-made CO2. The icy bad news for the theory is that the temperatures at and near the North and South Poles have been cooling instead.

No Warming 2/2

Temperatures are declining- Science scandal occurs as researchers change data

Ferrara ‘9

[Peter Ferrara is director of entitlement and budget policy at the Institute for Policy Innovation. He served in the White House Office of Policy Development under President Reagan, and as Associate Deputy Attorney General of the United States under the first President Bush. He is a graduate of Harvard College and Harvard Law School, “The Great Hoax”, 12-16, http://spectator.org/archives/2009/12/16/the-great-hoax/print, DOA: 6-29-12]

As Sarah Palin accurately reported in the Washington Post on December 9 (yes, braindead, left-wing bloggers, that Sarah Palin), the Climategate "emails reveal that leading climate 'experts' deliberately destroyed records, manipulated data to 'hide the decline' in global temperatures, and tried to silence their critics by preventing them from publishing in peer-reviewed journals." Given the magnitude of what the UN and associated environmentalist extremists are demanding on the basis of the supposed "science," Climategate is, in fact, the greatest science scandal in world history. One of the most revealing emails was from Phil Jones, Director of the University of East Anglia's Climate Research Unit (CRU), a fundamental feeder source for the UN's IPCC. He wrote, "I've just completed Mike's Nature trick of adding in the real temps to each series for the last 20 years (i.e. from 1981 onwards) and from 1961 for Keith's to hide the decline." Professor Trevor Davies, Pro-Vice Chancellor of the University of East Anglia, tried to explain away the revelation by saying, "One definition of the word 'trick' is 'the best way of doing something.' What Phil did was standard practice and the facts are out there in the peer-reviewed literature."

Not Anthro

Global Warming is not anthropogenic- Many qualified scientists conclude

Ferrara ‘9

[Peter Ferrara is director of entitlement and budget policy at the Institute for Policy Innovation. He served in the White House Office of Policy Development under President Reagan, and as Associate Deputy Attorney General of the United States under the first President Bush. He is a graduate of Harvard College and Harvard Law School, “The Great Hoax”, 12-16, http://spectator.org/archives/2009/12/16/the-great-hoax/print, DOA: 6-29-12]

In sharp contrast, first rate, blue chip scientists are increasingly concluding that humans have little effect on global temperatures, and that natural causes and temperature patterns continue to dominate. These include Fred Singer, Professor Emeritus of Environmental Science at the University of Virginia, and the founder and first Director of the National Weather Satellite Service, Richard Lindzen, Alfred P. Sloan Professor of Meteorology at the Massachusetts Institute of Technology, Roy Spencer, Principal Research Scientist at the University of Alabama at Huntsville, and U.S. Science Team Leader for the AMSR-E instrument flying on NASA's Aqua satellite, William Happer, Cyrus Fogg Brackett Professor of Physics at Princeton University, Syun-ichi Akasofu, Professor of Physics and former director of the International Arctic Research Center at the University of Alaska, Patrick Michaels, Research Professor of Environmental Sciences at the University of Virginia, and past President of the American Association of State Climatologists, and David Douglass, Professor of Physics at the University of Rochester, among many others. Physics icon Freeman Dyson recently expressed similar views in the New York Times. There is no collection of scientists in the world smarter and better than these. Indeed, as will be shown below, as a result of the work of these scientists, we now have scientific proof that the notion of significant man-caused global warming is false.

CO2 ≠ Warming

Global warming creates CO2- CO2 does not cause warming

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 107)

Seventh, CO2 for at least 240,000 years has been a lagging indicator of global warming, not a causal factor. The ice cores have revealed that temperatures and CO2 levels have tracked closely together during the warmings after each of Earth’s last three ice age galaciations. However, the CO2 changes have lagged about 800 years behind the temperature changes. Global warming has produced more CO2 rather than more CO2 producing global warming. This accords with the reality that the oceans hold the vast majority of the planet’s carbon, and the law of physics declare that when oceans warm, they must release some of their gases to the atmosphere.

CO2 emissions increase but temperatures are not warming- satellite data show

Ferrara ‘9

[Peter Ferrara is director of entitlement and budget policy at the Institute for Policy Innovation. He served in the White House Office of Policy Development under President Reagan, and as Associate Deputy Attorney General of the United States under the first President Bush. He is a graduate of Harvard College and Harvard Law School, “The Great Hoax”, 12-16, http://spectator.org/archives/2009/12/16/the-great-hoax/print]

What serious scientists the world over are concluding is that the temperature variations and patterns throughout the 20th century until today are consistent with natural causes, not the theory of man-caused global warming. The U.S. surface temperature record, now the most reliable in the world by far for several reasons, shows that temperatures in the 1930s were warmer than today. From 1940 to the late 1970s, U.S. temperatures declined, leaving no significant difference at that point from 1900. This decline, in fact, prompted widespread speculation that a new ice age was coming. Temperatures then increased until the El Niño spike of 1998 (unrelated to global warming), fueling the global warming hysteria. Since then, temperatures have begun to decline again. Since CO2 emissions increased continuously throughout this time, if man-caused global warming were true, temperatures should have shown a more consistently increasing pattern. The up and down pattern instead is consistent with varying ocean current temperatures, and solar activity such as sun spots. For example, the Pacific Decadal Oscillation (PDO) is a long-term pattern of ocean current temperatures that turns from cold to warm back to cold every 20 to 30 years, as cold water from deep in the ocean cycles up and is warmed. Far more reliable and relevant is the satellite data on atmospheric temperatures, which is not distorted either by manipulation or urban heat island effects. The satellite data starts in 1979, and shows no consistent increase in global temperature trends until the El Niño spike of 1998. Since then, the satellite data shows an accelerating decline of global atmospheric temperatures well on its way to completely offsetting the 1998 El Niño increase, which will leave the satellite record with no net increase in global temperature for the past 30 years. That decline, and the continued, extended period of minimal sunspot activity we are seeing, may mean we are headed for at least a new Little Ice Age after all.

Yes Bias 1/2

Global warming accounts are misinformed- journalists, reporters, and scientists are biased

Spencer’8

[Roy W, Ph.D. in meteorology at the University of Wisconsin-Madison in 1981, Climatologist and a Principal Research Scientist for the University of Alabama in Huntsville, former Senior Scientist for Climate Studies at NASA’s Marshall Space Flight Center, where he and Dr. John Christy received NASA’s Exceptional Scientific Achievement Medal for their global temperature monitoring work with satellites, “Climate Confusion”, pg. 26]

No one does a better job at keeping you misinformed on environmental issues than the mainstream news media, which increasingly tries to entertain you, and the entertainment industry, which increasingly tries to entertain you, and the entertainment industry, which increasingly tries to tell you what to believe about the newsworthy events. A large part of the public’s concern about the environment can be traced to editorial bias that exists in the major media sources. Journalists are no longer interested in keeping you informed. Instead, they are out to change the world. Ever since the Watergate scandal propelled the *Washington Post* reporters Bob Woodward and Carl Bernstein to fame during Richard Nixon’s presidency, reporters have lusted after the big scoop that will get them a Pulitzer Prize. Journalists today are falling all over themselves to convince you of how serious global warming will be. If the prize is ever given for climate change reporting, it will have to be shared by 1,735 journalists, all of whom have broken the story that a global warming Armageddon is coming. The very fact that news is, almost by definition, something startlingly different from normal means that there is plenty of room for both journalistic and scientific bias to creep in. After all, just like the scientist who wants to be the one to make a new and startling discovery and be awarded a Nobel Prize, the journalist wants to break the Big Story and receive a Pulitzer Prize. The media can always find an expert who is willing to provide some juicy quotes regarding our imminent environmental doom. Usually, there is a grain of truth to the story, which helps sell the idea. Like a science fiction novel, a somewhat plausible weather disaster tale captures our imagination, and we consider the possibility of global catastrophe. And some of the catastrophic events that are predicted are indeed possible, or at least not impossible. Catastrophic global warming- say, by 10 Fahrenheit or more over the next century- cannot be ruled out with 100 percent certainty. Of course, neither can the next extraterrestrial invasion of Earth.

Global Warming is not as outrageous as claimed- claims are made by alarmists for campaigners of their proposals

Lomborg 8

(Bjorn Lomborg ,Director of the Copenhagen Consensus Center and adjunct professor at the Copenhagen Business School, “Warming warnings get overheated”, The Guardian, 8/15/08, http://www.guardian.co.uk/commentisfree/2008/aug/15/carbonemissions.climatechange, DOA: 6-29-12)

Much of the global warming debate is perhaps best described as a constant outbidding by frantic campaigners, producing a barrage of ever-more scary scenarios in an attempt to get the public to accept their civilisation-changing proposals. Unfortunately, the general public – while concerned about the environment – is distinctly unwilling to support questionable solutions with costs running into tens of trillions of pounds. Predictably, this makes the campaigners reach for even more outlandish scares. These alarmist predictions are becoming quite bizarre, and could be dismissed as sociological oddities, if it weren't for the fact that they get such big play in the media. Oliver Tickell, for instance, writes that a global warming causing a 4C temperature increase by the end of the century would be a "catastrophe" and the beginning of the "extinction" of the human race. This is simply silly.

Yes Bias 2/2

The evidence presented are either biased or inaccurate- notable scientists have claimed warming exists yet their research contradicts

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 185)

We found a claim of species loss to global warming (the Golden Toad) that should not have been offered without a caveat, either by the authors or by Nature’s editors; both should have known about the deforestation study that seems to refute the claim that sea surface warming caused the disappearance of the Golden Toad. We found a reputable biologist, Chris Thomas, making scary claims about massive extinctions that are refuted by his own published research. We found a well-known biologist, Camille Parmesan , authoring a poorly supported and highly overstated claim, in a prestigious scientific journal, and repeatedly misusing the term “locally extinct” to over-dramatize climate warming risks. Finally, we found eco-activists and biologists who claim global warming is killing coral, in direct contradiction of scientific research showing the adaptability of coral reefs.

A2 Emissions → Warming

Warming is not caused by emission- data from satellites prove

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 141)

The satellites’ moderate warming trend is mirrored by independent readings from instruments carried aloft by high-altitude weather balloons that began to get near-global coverage in the late 1950s. Both satellites and balloons fail to validate the large man-made warming trend in the lower atmosphere predicted by GCMS. Satellites and weather balloons are giving us the most accurate temperature measurements we have had in all history, and they provide evidence that the Earth’s atmosphere has not warmed strongly in a sixty-year period during which greenhouse gas emissions hugely outstripped previous human “pollution.” About 80 percent of the carbon dioxide from human activities entered the air from after 1940. That means the warming before 1940 must be largely natural so the human effects cannot reasonably be considered greater than about 0.1 C per decade- the maximum amount of the warming trend seen since the late 1970s.

More evidence

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 104)

However, the alarmists don’t have much evidence to support their greenhouse theory- only (1) the fact that the Earth is warming, (2) a theory that doesn’t explain the warming of the past 150 years very well, and (3) some unverified computer models. Moreover, their credibility is seriously weakened by the fact that many of them have long believed modern technology should be discarded whether the Earth is warming too fast or not at all.

A2 Climate Research

Climate researchers collect inaccurate data- they use surface temperature data which is easily affected by density in an area

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 142)

Climate researchers have long recognized that the world’s official thermometer readings are artificially high because many of them are located at buildings and airports in urban heat islands. Even a village of 1,000 people can create a heat island, raising its own temperature by 2 to 3 C. James Goodridge, former California State Climatologist, found that temperature readings from California counties with more than one million inhabitants showed an “increase in temperature commonly attributed to greenhouse warming (as) 3.14 F. per century” while counties with fewer than 0.1 million inhabitants showed no warming trend.

A2 Greenhouse Theory

The greenhouse theory is false- three reasons prove

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 105)

Let’s begin by reviewing the shortcomings of the greenhouse theory. First, and most obvious, CO2 changes do not account for the highly variable climate we know the Earth has recently had, including the Ran Warming, the Dark Ages, the Medieval Warming, and the Little Ice Age. However, these variations fit very well into the natural 1,500- year cycle. Second, the greenhouse theory does not explain recent temperature changes. Most of the current warming occurred before 1940, before there was much human-generated CO2 in the air. After 1940, temperatures declined until 1975 or so, despite a huge surge in industrial CO2 during that period. These events run counter to the greenhouse theory, but they are in accord with the 1,500-year cycle. Third the early and supposedly most powerful increases in atmospheric CO2 have not produced the frightening planetary overheating that the theory and climate models told us to expect. We must discount future increments of CO2 in the atmosphere, because each increment of CO2 increase produces less warming than the unit before it. The amounts of CO2 already added to the atmosphere may already be close to saturation levels.

\*\*Impact Defense

War Outweighs

Nuclear war is worse than and causes warming

Hoffman ’06

[Ian, Oakland Tribune Staff Writer, Dec 12, “Nuclear Winter looms, experts say,” http://findarticles.com/p/articles/mi\_qn4176/is\_20061212/ai\_n16906378; DOA:6-29-12]

"Nuclear weapons represent the greatest single human threat to the planet, much more so than global warming," said Rutgers University atmospheric scientist Alan Robock. By dropping imaginary Hiroshima-sized bombs into some of the world's biggest cities, now swelled to tens of millions in population, University of Colorado researcher O. Brian Toon and colleagues found they could generate 100 times the fatalities and 100 times the climate-chilling smoke per kiloton of explosive power as all-out nuclear war between the United States and former Soviet Union. For most modern nuclear-war scenarios, the global impact isn't nuclear winter, the notion of smoke from incinerated cities blotting out the sun for years and starving most of the Earth's people. It's not even nuclear autumn, but rather an instant nuclear chill over most of the planet, accompanied by massive ozone loss and warming at the poles.

A nuclear holocaust would devastate the planet- Drastic climate change

Hoffman ’06

[Ian, Oakland Tribune Staff Writer, Dec 12, “Nuclear Winter looms, experts say,” http://findarticles.com/p/articles/mi\_qn4176/is\_20061212/ai\_n16906378]

More than 20 years ago, researchers imagined a U.S.-Soviet nuclear holocaust would wreak havoc on the planet's climate. They showed the problem was potentially worse than feared: Massive urban fires would flush hundreds of millions of tons of black soot skyward, where -- heated by sunlight -- it would soar higher into the stratosphere and begin cooking off the protective ozone layer around the Earth. Huge losses of ozone would open the planet and its inhabitants to damaging radiation, while the warm soot would spread a pall sufficient to plunge the Earth into freezing year-round. The hundreds of millions who would starve exceeded those who would die in the initial blasts and radiation.

Even a small-scale nuclear war would devastate the environment

Byner ’06

[Jeanna, Live Science Staff Writer, Dec 11, “Small Nuclear War Would Cause Global Environmental Catastrophe,” http://www.livescience.com/forcesofnature/061211\_nuclear\_climate.html]

SAN FRANCISCO—A small-scale, regional nuclear war could disrupt the global climate for a decade or more, with environmental effects that could be devastating for everyone on Earth, researchers have concluded. The scientists said about 40 countries possess enough plutonium or uranium to construct substantial nuclear arsenals. Setting off a Hiroshima-size weapon could cause as many direct fatalities as all of World War II. "Considering the relatively small number and size of the weapons, the effects are surprisingly large," said one of the researchers, Richard Turco of the University of California, Los Angeles. "The potential devastation would be catastrophic and long term."

A2: Peak Oil

Limits on oil and gasoline are not needed to cease global warming- peak oil theory is wrong

Simpson 11

(Brian P. Simpson is a Ph.D, an associate professor in National University for School of Business and Management; “The effect of environmental regulations and other government controls on oil and gasoline production”; Energy and Environment; Volume 22, Nov. 3, 2011; http://multi-science.metapress.com/content/l44v415276p7127p/fulltext.pdf, DOA: 6-28-12)

Government imposed restrictions on oil and gasoline production based on environmentalist ideology are claimed to be needed for a variety of reasons. We need controls on oil production, it is claimed, because we are (or soon will be) running out of oil (so-called peak oil theory). Thus, government controls are needed to slow the depletion or force “alternative fuels” on people before we run out. Further, it is claimed that government controls on oil and gasoline production are needed to stop global warming (now climate change) and pollution as well. None of these claims are valid. Addressing these claims in detail is outside the scope of this paper. I will address them briefly merely to indicate why these claims are not valid and provide references for the details. If one wants comprehensive arguments for the claims made in this section, please see the references cited here. People have been predicting we will run out of oil since the early days of the industry, even shortly after the first oil well was drilled in the U.S. in Pennsylvania in 1859. They continue to make such claims today. However, the facts belie these predictions. Predictions based on “peak oil theory” have been proven to be grossly inaccurate over and over again. The most interesting question the theory raises is not when oil production will peak, but why forecasters merely generate new forecasts, using virtually the same models that have proven to be grossly inaccurate in the past, without explaining the cause of the previous errors. The fact is that total worldwide oil production continues to expand. In addition, for decades the number of years of reserves has expanded despite dramatically rising consumption rates. This is true not only for oil but for other fossil fuels, such as coal and natural gas, as well as for the fuel that creates nuclear power. The years of reserves represents how long currently known reserves will last if current consumption rates continue into the future. The future of oil and gasoline looks good as long as this number does not trend downward.

A2 Warming × Agriculture

Agriculture in North America will thrive through climate change

Schwartz & Randall ’03

[Peter (Chair of the Global Business Network) & Doug (Co-head of same thing), October 2003, “An Abrupt Climate Change Scenario and Its Implications for United States National Security”,  http://www.gbn.com/articles/pdfs/Abrupt%20Climate%20Change%20February%202004.pdf, DOA:7-1-12]

Climatically, the gradual change view of the future assumes that agriculture will continue to thrive and growing seasons will lengthen. Northern Europe, Russia, and North America will prosper agriculturally while southern Europe, Africa, and Central and South America will suffer from increased dryness, heat, water shortages, and reduced production. Overall, global food production under many typical climate scenarios increases. This view of climate change may be a dangerous act of self deception, as increasingly we are facing weather related disasters -- more hurricanes, monsoons, floods, and dry-spells – in regions around the world.

A2 Warming × Biodiversity

There is no logical evidence that claims that a large number of species would die from global warming

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 185)

We have looked at the theory and for the real-world evidence of mass extinction due to global warming. We find no persuasive rationale that large number of species would die from global warming, nor any real world wild species losses due to the warming Earth has experienced recently. Instead, we find a great deal of evidence that species move effectively to keep or expand their ranges in response to climate change. By their movements, they are testifying the alarmism of global warming activists. We also find both theory and evidence that higher concentrations of CO2 help plants – and ultimately animals – adapt to higher temperatures. That extinction theorists continue to ignore this peer- reviewed literature is inexcusable. Wildlife biologists probably hate to take advice from colleges of agriculture, where most of the CO2 research has been done. Nevertheless, the CO2 research is a vital element of global warming threat analysis.

A2 Warming → Civil Wars

Global Warming will not cause civil war

Tol & Wagner ’08

[Richard & Sebastian, Economic & social Research Institute for Coastal Research, Jan 15, “Climate Change and Violent Conflict in Europe over the Last Millennium,” http://www.fnu.zmaw.de/fileadmin/fnu-files/publication/working-papers/climatewarwp.pdf; DOA: 6-29-12]

In this paper, we study the relationship between climate change and violent conflict over the past millennium in Europe. Our results do not show a clear-cut picture: We present some evidence that abnormally cold periods were abnormally violent, as do Zhang et al. (2006). However, we also show that this evidence is not particularly robust. If one has strong priors that climate change causes conflict, our results provide confirmation. However, if one has strong priors that there is no link, our results do not overthrow such doubt. If anything, cold implies violence, and this effect is much weaker in the modern world than it was in mediaeval times. This implies that future global warming is not likely to lead to (civil) war between (within) European countries. Should anyone ever seriously have believed that, this paper does put that idea to rest.

A2 Warming × Human Health

Even with global warming, people will still live longer and healthier lives

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 218-9)

Nothing in any global warming scenario is likely to alter the expected results of modern medicine and health care: better health and longer lives in the 21st century, whether the century’s warming trend is natural or man-made. Indeed, the outlook is that more and more of the world’s human population is likely to live longer and healthier lives –unless the fear of man-made global warming leads human societies to restrict or abandon the gains in economic prosperity achieved through abundant, low-cost energy and further advances in science and technology.

A2 Warming × Ice Caps

Global warming will not melt ice caps and glaciers completely- it will take thousands of years

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 156)

Global warming alarmists assume a huge increase in sea level is inevitable and will occur soon if the planet continues to warm. Sea level rise is a product of conflicting forces, however. Warmer temperatures cause the volume of water to expand. Warmer temperatures also melt glacier ice, creating more water. But warmer temperatures also evaporate more water from oceans and lakes. When clouds deposit the increased moisture from that rapid evaporation on polar ice caps and glaciers around the world, the ice caps and glaciers will grow, trapping more water, until or unless the local temperatures are warn enough to increase local melting. Time is a critical factor. Ice melts slowly. Glaciers and ice caps can take thousands of years to melt completely because their surfaces reflect so much of the sun’s heat. That is why the West Antarctic ice sheet, at least 10,000 years past its last Ice Age, still has another 7,000 years’ worth of ice to melt, according to John Stone of the University of the rocks left behind on the mountains of Antarctica’s Ford Range when the ice began to retreat. Given the Earth’s highly-variable climate history, another cooling period is almost certain to intervene long before the West Antarctic Ice Sheet disappears. Moreover, the East Antarctic Ice Sheet, which holds the vast majority of the Antarctic ice, would still be massive.

Nations near the Arctic are not warming; they are cooling

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 111)

The University of Alaska’s Igor V. Polyakov and his team analyzed the data from 125 Arctic land stations and a number of drifting buoys. They found a strong warming between 1917 and 1937, but no net warming – and perhaps a slight cooling – since 1937. Greenland has also been growing colder over the last half-century, with a statistically significant cooling, particularly in southwestern coastal Greenland. Sea surface temperatures in the nearby Labrador Sea also fell. The studies were made by Edward Hanna of Britain’s University of Plymouth and John Capellan of the Danish Meterological Institute using data from the surface of the nearby sea.

A2 Warming → Malaria

Global warming does not increase malaria infections- no accurate correlation between presence of mosquitoes and temperatures

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 216-7)

Global warming alarmists have warned of increases malaria infections and deaths as global temperatures increase. For example, environmentalist Paul Brown has claimed, “The combined effects of increased warmth and the greater volume of standing water brought by storms create malaria epidemics by providing breeding sites and a speeded-up life cycle. In Africa, where the death toll from malaria is highest, mosquitoes carrying the disease are spreading into mountain areas previously too cool for them to thrive.” However this ignores the reality that malaria is highest, mosquitoes, carrying the disease are spreading into mountain areas previously too cool for them to thrive. However, this ignores the reality that malaria epidemics have occurred as far as north as the Arctic Circle. The worst known outbreak was in Russia during the1920s, with 16 million suck and 600,000 deaths. If air temperatures alone were the key factor, mosquito-borne diseases-including malaria and yellow fever- would already have become major threats to Americans again as we flocked to the Sun Belt and water-shore environments during the air-conditioning era. Instead, because of modern medicine and technology, we have found ourselves free to enjoy seashores, riverbanks, southern living, and marsh-side homes with fewer health worries than any people in history.

A2 Warming → Resource Wars

Climate change & resource scarcity doesn’t directly cause war

Tol & Wagner ’08

[Richard & Sebastian, Economic & social Research Institute for Coastal Research, Jan 15, “Climate Change and Violent Conflict in Europe over the Last Millennium,” http://www.fnu.zmaw.de/fileadmin/fnu-files/publication/working-papers/climatewarwp.pdf, DOA: 6-29-12]

Research into the determinants of violent conflict has concluded that resource scarcity is at best a contributing factor to, but never a cause of war (Alesina and Spolaore, 2005; Collier and Hoeffler, 1998, 2005; Homer-Dixon, 1991, 1992; Homer-Dixon et al., 1993; Maxwell and Reuveny, 2000). The corollary is that climate-change-induced resource scarcity would not lead to war either, although it may intensify pre-existing conflicts.

A2 Warming → Rising Sea Levels

Sea levels will rise but not as high as alarmists came

Lomborg 8

(Bjorn Lomborg ,Director of the Copenhagen Consensus Center and adjunct professor at the Copenhagen Business School, “Warming warnings get overheated”, The Guardian, 8/15/08, http://www.guardian.co.uk/commentisfree/2008/aug/15/carbonemissions.climatechange, DOA: 6-29-12)

His evidence? That 4C would mean that all the ice on the planet would melt, bringing the long-term sea level rise to 70-80m, flooding everything we hold dear, seeing billions of people die. Clearly, Tickell has maxed out the campaigners' scare potential (because there is no more ice to melt, this is the scariest he could ever conjure). But he is wrong. Let us just remember that the UN climate panel, the IPCC, expects a temperature rise by the end of the century between 1.8 and 6.0C. Within this range, the IPCC predicts that, by the end of the century, sea levels will rise 18-59 centimetres – Tickell is simply exaggerating by a factor of up to 400. Tickell will undoubtedly claim that he was talking about what could happen many, many millennia from now. But this is disingenuous. First, the 4C temperature rise is predicted on a century scale – this is what we talk about and can plan for. Second, although sea-level rise will continue for many centuries to come, the models unanimously show that Greenland's ice shelf will be reduced, but Antarctic ice will increase even more (because of increased precipitation in Antarctica) for the next three centuries. What will happen beyond that clearly depends much more on emissions in future centuries. Given that CO2 stays in the atmosphere about a century, what happens with the temperature, say, six centuries from now mainly depends on emissions five centuries from now (where it seems unlikely non-carbon emitting technology such as solar panels will not have become economically competitive). Third, Tickell tells us how the 80m sea-level rise would wipe out all the world's coastal infrastructure and much of the world's farmland – "undoubtedly" causing billions to die. But to cause billions to die, it would require the surge to occur within a single human lifespan. This sort of scare tactic is insidiously wrong and misleading, mimicking a firebrand preacher who claims the earth is coming to an end and we need to repent. While it is probably true that the sun will burn up the earth in 4-5bn years' time, it does give a slightly different perspective on the need for immediate repenting.

A2 Warming → Water Wars

Water Wars will not result from global warming

Lewis '10 - Senior Fellow at the Competitive Enterprise Institute

[Marlo, "The Department of Defense Should Assess the Security Risks of Climate Change Policies", April 20, http://cei.org/cei\_files/fm/active/0/On%20Point%20-%20Marlo%20Lewis%20-%20Climate%20Change%20and%20National%20Security%20-%20FINAL.pdf]

The Quadrennial Defense Review cautions that climate change can weaken fragile governments by increasing the frequency and severity of environmental stresses such as droughts, floods, and disease. Although climate change undoubtedly has this potential, the risks have been highly exaggerated. One of the principal ways in which climate change supposedly undermines stability is by intensifying droughts and water shortages, thus leading to crop failure, famine, and armed conflict. Yet real-world evidence doesn’t support this gloomy prediction. Wendy Barnaby, editor of People & Science, the journal of the British Science Association, wrote a fascinating essay in Nature magazine on this topic. She had been researching a book on the “coming century of water wars.” She assumed that water scarcity is already a significant source of conflict— a pervasive problem just waiting to be “threat multiplied” by climate change. But as Barnaby dug into her topic, she discovered that cooperation rather than conflict is the dominant response to shared water resources. Of 1,831 interactions over international fresh water resources spanning five decades, she could not find a single declared war—not even in the conflict-ridden, water-scarce Middle East. Egypt and Jordan have gone to war with Israel several times, but never over water. Rather than fight about water, they cooperate and import “virtual water” in the form of grain. Irrigated agriculture consumes far more water than people consume for personal use. By importing grain, Mideast nations free up scarce water supplies for drinking and bathing. More virtual water flows into the Mideast each year embedded in grain than flows down the Nile to Egyptian farmers. Barnaby concludes her essay by rejecting the fashionable notion that water wars are inevitable in a warming world.

\*\*Warming Good

Warming Good – Agriculture 1/3

CO2 helps crops and growing seasons

Gil Gullickson May 3rd, 2012 (Crops Technology Editor for Successful Farming magazine/Agriculture.com, “Climate change 101” http://www.agriculture.com/crops/climate-chge-101\_135-ar23950)

Bear in mind that if man-made climate change is occurring, you'll see it over a period of time. After all, it took since the mid-1800s for atmospheric carbon dioxide levels to rise from 280 parts per million (ppm) to the current 392 ppm. In some ways, this increase is good news. “When you increase carbon dioxide, crops grow better,” says Nick Harmon, director of sustainability for Bayer CropScience. “Crops, in general, will have a reduced number of stomata. Stomata are the mode of gas exchange in plants. They are also the way plants lose water.” Rising temperatures provide some good news for those of you in Northern areas. Longer growing seasons will generally occur. For example, farmers in Iceland have been able to grow barley for the first time in recent years, says Harmon. This will help farmers in the northern Plains grow more winter wheat. Traditionally, farmers in states like Minnesota and North Dakota have been caught in a wheat tug-of-war. Historically, winters have been too brutal for winter wheat to survive winters like those in North Dakota. Meanwhile, spring wheat risked cooking in hot summers during kernel formation. Milder winter temperatures will expand winter wheat production that's already occurring in these areas, notes Harmon.

CO2 is the source of life- Without it there would be no vegetation on Earth

Idso and Idso’99

[Dr. Sherwood, President, former Research Physicist with the U.S. Department of Agriculture's Agricultural Research Service at the U.S. Water Conservation Laboratory in Phoenix, Arizona and Dr. Keith, Ph.D. in Botany at Arizona State University, President and Vice President of the Center for the Study of Carbon Dioxide and Global Change, CO2 Science, “Give Peace a Chance by Giving Plants a Chance”, Vol. 2, No. 19, 10-1, http://www.co2science.org/articles/V2/N19/EDIT.php, DOA: 7-1-12]

Can the case for atmospheric CO2 enrichment be made any clearer? Automatically, and without the investment of a single hard-earned dollar, ruble, or what have you, people everywhere promote the cause of peace by fertilizing the atmosphere with carbon dioxide; for CO2 - one of the major end-products of the combustion process that fuels the engines of industry and transportation - is the very elixir of life, being the primary building block of all plant tissues via the essential role it plays in the photosynthetic process that sustains nearly all of earth's vegetation, which in turn sustains nearly all of the planet's animal life. As with any production process, the insertion of more raw materials (in this case CO2) into the production line results in more manufactured goods coming out the other end, which, in the case of the production line of plant growth and development, is biosphere-sustaining food. And as President Carter rightly states, "leaders of developing nations must make food security a priority." Indeed, he ominously proclaims in his concluding paragraph that "there can be no peace until people have enough to eat."

Warming Good – Agriculture 2/3

Atmospheric CO2 is increasing food production

Idso and Idso’99

[Dr. Sherwood, President, former Research Physicist with the U.S. Department of Agriculture's Agricultural Research Service at the U.S. Water Conservation Laboratory in Phoenix, Arizona and Dr. Keith, Ph.D. in Botany at Arizona State University, President and Vice President of the Center for the Study of Carbon Dioxide and Global Change, CO2 Science, “Give Peace a Chance by Giving Plants a Chance”, Vol. 2, No. 19, 10-1, http://www.co2science.org/articles/V2/N19/EDIT.php, DOA: 7-1-12]

Our findings suggest that the world food security envisioned by President Carter is precariously dependent upon the continued rising of the atmosphere's CO2 concentration. As Sylvan Wittwer, Director Emeritus of Michigan State University's Agricultural Experiment Station, stated in his 1995 book, Food, Climate, and Carbon Dioxide: The Global Environment and World Food Production, "The rising level of atmospheric CO2 could be the one global natural resource that is progressively increasing food production and total biological output, in a world of otherwise diminishing natural resources of land, water, energy, minerals, and fertilizer. It is a means of inadvertently increasing the productivity of farming systems and other photosynthetically active ecosystems. The effects know no boundaries and both developing and developed countries are, and will be, sharing equally."

CO2 will act as fertilizer for trees and plants- Warming does not make plants and animals migrate

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 173-4)

The Idso analysis also notes that higher CO2 levels act as fertilizer for trees and plants, and that higher CO2 levels also reduce the amount of energy needed by most plant species to conduct a process called photorespiration. So long as temperatures and CO2 are both rising, trees and plants gain vigor with which to exploit warming’s opportunities for range expansion. “Proponents of what we shall call the Co2-induced global warming extinction hypothesis seem to be totally unaware of the fact that atmospheric CO2 enrichment tends to ameliorate the deleterious effects of rising temperatures on Earth’s vegetation,” says the Idso report. It goes on to say: They appear not to know that more CO2 in the air enables plants to grow better at nearly all temperatures, but especially at higher temperatures. … Under such conditions, plants living near the heat-limited boundaries of their ranges do not experience an impetus to migrate poleward or upward towards cooler regions of the globe. At the other end of the temperature spectrum, however, plants living near the cold-limited boundaries of their ranges, both poleward in latitude and upward in elevation, while they have maintained the locations of the heat-limited boundaries of their ranges. Animals react in much the same way. Over the past century and a half of increasing air temperature and CO2 concentration, many species of animals have significantly extended the cold-limited boundaries of their ranges, both poleward in latitude and upward in elevation, while they have maintained the locations of the heat-limited boundaries of their ranges.

CO2 enhances plant growth- acts as fertilizer for photosynthesis

Cline 08

(William R. Cline is an American economist with a Ph.D at Yale; and a member of the Center for Global Development; *Finance and Development*, “Global Warming and Agriculture”, March 2008; http://www.imf.org/external/pubs/ft/fandd/2008/03/pdf/cline.pdf, pg. 27)

But a key culprit in climate change—carbon emissions—can also help agriculture by enhancing photosynthesis in many important, so-called C3, crops (such as wheat, rice, and soybeans). The science, however, is far from certain on the benefits of carbon fertilization. But we do know that this phenomenon does not much help C4 crops (such as sugarcane and maize), which account for about one-fourth of all crops by value.

Warming Good – Agriculture 2/3

CO2 is positive, fertilizes plants - Satellite observations confirm

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 175)

The importance of CO2 as a fertilizer is confirmed by satellite observations of global vegetation from 1982 to 1999, which found an increase in global plant growth of more than 6 percent. The planet during that period experienced slightly increasing rainfall and slightly rising temperatures – but the major change for plants was the increase in atmospheric CO2.All of the regions showed positive gains in plant growth despite the real and imagined environmental stresses postulated by climate warming alarmists.

Climate Change increases productivity of crops

Mendelsohn and Dinar 11

(Robert O. Mendelsohn is an American environmental economist, a professor of the school of Forestry and Environmental Studies at Yale University, a contributor to the first Copenhagen report and a researcher of the environment; Ariel Dinar is a professor of environmental economics and policy and director at the Department of Environmental Sciences at Water Science and Policy Center. A PhD in Agricultural and Resource Economics; *Handbook on Climate Change and Agriculture,* Edward Elgar Publishing Limited: 2011, pg. 2)

This part of the book introduces readers to the scientific background that links climate and crops and livestock, crop modeling and drought studies. Ziska (Chapter 2) addresses several challenges that climate change poses for field crops. He also emphasizes potential adaptations to these challenges by addressing the options in biodiversity, agronomic pacrtices and biofuels that could allow agriculture to adapt or mitigate climate change impacts on crop production. Uncertainties are discussed, including uncertainties in field experiments and in modeling, as well as climate predictions. The chapter illustrates potential changes that could maintain or increase productivity in an uncertain climate.

Varying CO2 concentrations help plant biodisversity

Ziska 11

(Lewis H. Ziska is a plant physiologist in the US Department of Agriculture’s Agricultural Research Service in Maryland and was the project leader for global climate change at the International Rice Research Institute in the Philippines prior to working with the USDA; *Handbook on Climate Change and Agriculture,* Edward Elgar Publishing Limited: 2011, pg. 16-7)

Preservation crop diversity is also necessary because each crop variety represents a different response to a range of abiotic (e.g. temperature, water) and biotic (e.g. insects, diseases) stresses. Given sufficient time, reliance on a single variety will result in yield loss due to exposure to pathogens, weeds or environmental limitations. If diversity provides sustainability in an uncertain climate, can it also be exploited as a means to increase productivity? Recall that CO2, in addition to being a greenhouse gas, is also resource for plant growth as it provides carbon for photosynthesis. Other resources include nutrients, water and sunlight. As we would not expect all plants to respond in the same way to an increase in sunlight, water or nutrients, we would not expect all plants to respond in the same way to CO2. What then are the best, most responsive, crop varieties? How much variation in Co2 exists within a single crop? Can these variations be exploited not only to convert additional CO2 into seed yield but to also identify more temperature- or drought-tolerant lines? Initial data indicate that there is significant intraspecific variation among both cultivated and wild lines of cereal species that could be used to maintain or even increase crop yields with CO2 and/or climate (Edwards and Newton, 2007; Ziska, 2008).

Agriculture Impact

Thriving agriculture leads to economic growth and prosperity and peace- There is a need for food for peace

Idso and Idso’99

[Dr. Sherwood, President, former Research Physicist with the U.S. Department of Agriculture's Agricultural Research Service at the U.S. Water Conservation Laboratory in Phoenix, Arizona and Dr. Keith, Ph.D. in Botany at Arizona State University, President and Vice President of the Center for the Study of Carbon Dioxide and Global Change, CO2 Science, “Give Peace a Chance by Giving Plants a Chance”, Vol. 2, No. 19, 10-1, http://www.co2science.org/articles/V2/N19/EDIT.php, DOA: 7-1-12]

Perusing our local newspaper of 26 September 1999, our attention was captured by the title of an opinion piece in the Perspective section: "To cultivate peace, we must first cultivate food." Penned by former U.S. President Jimmy Carter, this article - albeit unknowingly, perhaps - makes an impressive case for the great good that can come from the ongoing rise in the air's CO2 content. President Carter begins by stating that "when the Cold War ended 10 years ago, we expected an era of peace" but got instead "a decade of war." He then asks why peace has been so elusive, answering that most of today's wars are fueled by poverty, poverty in developing countries "whose economies depend on agriculture but which lack the means to make their farmland productive." This fact, he says, suggests an obvious, but often overlooked, path to peace: "raise the standard of living of the millions of rural people who live in poverty by increasing agricultural productivity," his argument being that thriving agriculture, in his words, "is the engine that fuels broader economic growth and development, thus paving the way for prosperity and peace."

Warming Good – Ice Age 1/2

**warming is key to prevent an ice age & extinction**

Hoyle and Wickramashinge ‘1

Fred and Chandra, School of Mathematics @ Cardiff U., Astrophysics and Space Science, “Cometary Impacts and Ice-Ages”, Vol. 275, No. 4, March, Springer

The 18O/16O analysis of Greenland ice cores shows that an immense melting of glacier ice began about 13,000 years ago and was essentially completed within a millenium. But this information is slow-moving in time, although it possesses the great merit of being of world-wide significance. On a more restricted geographical scale, fossil insect records show that the summer temperature in Britain rose by 10oC or more in as little as 50 years, an essentially decisive indication of a catastrophic event as its cause. The fossil insect record also shows that a second catastrophic event of a similar nature occurred 10,000 years ago, again with a major temperature rise in only a few decades. It is therefore cometary impacts that we must thank for the equable spell of climate in which human history and civilisation has prospered so spectacularly. The renewal of ice-age conditions would render a large fraction of the world's major food-growing areas inoperable, and so would inevitably lead to the extinction of most of the present human population. Since bolide impacts cannot be called up to order, we must look to a sustained greenhouse effect to maintain the present advantageous world climate. This implies the ability to inject effective greenhouse gases into the atmosphere, the opposite of what environmentalists are erroneously advocating. 5. Conclusions Ice-age conditions are dry and cold, the local temperature being reduced over the entire Earth. The high atmosphere probably had a haze of small ice crystals while the lower atmosphere was dusty. Such conditions were stable, capable of persisting until a large bolide hit one of the major oceans. The water then thrown high into the stratosphere provided a large temporary greenhouse effect, but sufficient to produce a warming of the world ocean down to a depth of a few hundred metres. It is this warming that maintains the resulting interglacial period. The interglacial climate possesses only neutral equilibrium however. It experiences random walk both up and down, until a situation arises in which the number of steps downward become sufficient for the Earth to fall back into the ice-age trap. Thereafter only a further large bolide impact can produce a departure from the grey, drab iceage conditions. This will be so in the future unless Man finds an effective way to maintain a suitably large greenhouse effect.

Warming Good – Ice Age 2/2

Addressing the coming Ice Age should be prioritized before warming- in the past, CO2 emissions and temperatures were higher than the statue quo

Marsh ’08

[George, physicist, “The Coming of a New Ice Age,” http://www.winningreen.com/site/epage/59549\_621.htm, DOA:7-1-12]

CHICAGO — Contrary to the conventional wisdom of the day, the real danger facing humanity is not global warming, but more likely the coming of a new Ice Age. What we live in now is known as an interglacial, a relatively brief period between long ice ages. Unfortunately for us, most interglacial periods last only about ten thousand years, and that is how long it has been since the last Ice Age ended. How much longer do we have before the ice begins to spread across the Earth’s surface? Less than a hundred years or several hundred? We simply don’t know. Even if all the temperature increase over the last century is attributable to human activities, the rise has been relatively modest one of a little over one degree Fahrenheit — an increase well within natural variations over the last few thousand years. While an enduring temperature rise of the same size over the next century would cause humanity to make some changes, it would undoubtedly be within our ability to adapt. Entering a new ice age, however, would be catastrophic for the continuation of modern civilization. One has only to look at maps showing the extent of the great ice sheets during the last Ice Age to understand what a return to ice age conditions would mean. Much of Europe and North-America were covered by thick ice, thousands of feet thick in many areas and the world as a whole was much colder. The last “little” Ice Age started as early as the 14th century when the Baltic Sea froze over followed by unseasonable cold, storms, and a rise in the level of the Caspian Sea. That was followed by the extinction of the Norse settlements in Greenland and the loss of grain cultivation in Iceland. Harvests were even severely reduced in Scandinavia Andthis was a mere foreshadowing of the miseries to come. By the mid-17th century, glaciers in the Swiss Alps advanced, wiping out farms and entire villages. In England, the River Thames froze during the winter, and in 1780, New York Harbor froze. Had this continued, history would have been very different. Luckily, the decrease in solar activity that caused the Little Ice Age ended and the result was the continued flowering of modern civilization. There were very few Ice Ages until about 2.75 million years ago when Earth’s climate entered an unusual period of instability. Starting about a million years ago cycles of ice ages lasting about 100,000 years, separated by relatively short interglacial periods, like the one we are now living in became the rule. Before the onset of the Ice Ages, and for most of the Earth’s history, it was far warmer than it is today. Indeed, the Sun has been getting brighter over the whole history of the Earth and large land plants have flourished. Both of these had the effect of dropping carbon dioxide concentrations in the atmosphere to the lowest level in Earth’s long history. Five hundred million years ago, carbon dioxide concentrations were over 13 times current levels; and not until about 20 million years ago did carbon dioxide levels dropped to a little less than twice what they are today. It is possible that moderately increased carbon dioxide concentrations could extend the current interglacial period. But we have not reached the level required yet, nor do we know the optimum level to reach. So, rather than call for arbitrary limits on carbon dioxide emissions, perhaps the best thing the UN’s Intergovernmental Panel on Climate Change and the climatology community in general could do is spend their efforts on determining the optimal range of carbon dioxide needed to extend the current interglacial period indefinitely. NASA has predicted that the solar cycle peaking in 2022 could be one of the weakest in centuries and should cause a very significant cooling of Earth’s climate. Will this be the trigger that initiates a new Ice Age? We ought to carefully consider this possibility before we wipe out our current prosperity by spending trillions of dollars to combat a perceived global warming threat that may well prove to be only a will-o-the-wisp.

Ice Age Coming

A massive cooling is coming not global warming

Caruba ’08

[Alan, journalist and chairman of NAC, Feb, “Calm Sun, Cold Earth,” http://www.anxietycenter.com/climate/main.htm, DOA:7-1-12]

It’s useful to know that global temperatures closely reflect solar cycles. The lack of activity “could signal the beginning of what is known as the Maunder Minimum.” While solar cycles tend to last about 11 years, the lack of normal or increased activity can trigger the Maunder Minimum, an event that occurs every few centuries, can last as long as a century, and causes a colder earth. The most recent such event was the mini-Ice Age that climatologists date from around 1300 to 1850. In the midst of this there was a distinct solar hibernation from around 1650 to 1715. “Tapping reports no change in the sun’s magnetic field so far this cycle and if the sun remains quiet for another year or two, it may indicate a repeat of that period of drastic cooling of the Earth, bringing massive snowfall and severe weather to the Northern Hemisphere.” If you have been paying attention to global weather reports, you know that China has had the heaviest snowfall in at least three decades. David Deming, a geophysicist, in a December 19, 2007 article in The Washington Times, noted that, “South America this year experienced one of its coldest winters in decades. In Buenos Aires, snow fell for the first time since the year 1918.” This occurred across the entire Southern Hemisphere. “Johannesburg, South Africa, had the first significant snowfall in 26 years. Australia experienced the coldest June ever.”This represents a major threat to Earth’s population because it means that food crops will fail and, with them, the means to feed livestock, and the rest of us. Up to now, the mainstream media has ignored this cooling. They have been in complete thrall to the howling of Al Gore with his endless lies about an imminent warming. Add to Gore the large numbers of scientists who have sold their soul to the global warming lies in order to receive millions in research grants. Driving this bogus crisis has been the United Nations whose International Panel on Climate Change reports have been based, not on hard science such as observations of solar activity, but on flawed, often deliberately false computer models. To their credit, many of the IPCC participants have protested these reports. Now layer in U.S. politicians and their counterparts in Europe who are seeking to impose all manner of limits on energy use based on the false assertion that greenhouse gas emissions are causing global warming. They want to mandate a “cap-and-trade” scheme that will make some people and industries wealthy selling credits that will permit greenhouse gas emissions. But it is not greenhouse gases we need to fear, it is the action or inaction of the Sun.At the very moment the Earth is on the cusp of what is likely to be a very long cooling and possibly a full scale repeat of the last Ice Age, all the engines of government, nationally and internationally, are trying to inhibit the discovery, extraction, and use of energy reserves that will be needed to cope with climate changes that will impact millions, if not billions of people.All the wind turbines and solar panels in the world will not keep you warm in your home or apartment when a short or long term cooling of the Earth occurs. Ironically, as the Greens rant about so-called endangered polar bears in the Arctic, the bears are far more likely to survive than humans.

The Little Ice Age that is coming will be worse than the warming scientists claim is coming

D’Aleo ’07

[Joseph, Meteorologist at Weather Services International, Jul 9, “Global Warming – is carbon dioxide getting a bad rap?” http://www.energytribune.com/articles.cfm?aid=544#, DOA:7-1-12]

There are indications, given both the 80-year and 180-year cycles, that the sun will be much less active over coming decades. The majority of solar cycle methods suggest the next cycle will be less than the last one, which itself was 20 percent less than the prior cycles. NASA (Hathaway), based on the observed slowing of the sun’s plasma flow, predicts that cycle 25, which peaks in 2022, could be the quietest in centuries. Remember that quiet cycles are cool cycles. Also, the Pacific Decadal Oscillation increasingly shows signs of descending back into its cold mode. This, too, should result in global cooling. The Atlantic may have another decade to go before it cools again. These three factors suggest a cooling is about to begin. In fact, there are a number of measures, such as ocean heat content (which has not increased in the last 4 years), satellite-derived atmospheric temperatures, and ocean and land temperatures, which are all showing a cooling period over the last 5 to 8 years. It is possible either 1998 or 2001 will end up being the peak of this current warm cycle. Before the next assessment, the world may be taking note of the cooling or the cessation of the warming. I suppose the UN and the alarmist scientists and environmental groups will claim credit for stopping the disaster just in time. Lost in all of this is the fact that we have had an optimum climate the last 30 years – with warmer temperatures, more rainfall, and increased CO2 – that has enabled us to grow more food in more places, and consume less energy than had the cold weather of the 60s and 70s persisted. Descending back into a little Ice Age has far greater negative consequences than a slow and relative minor warming.Crop failures and famines are more common due to dryness and cold, and the world would consume more energy for heating. We may look back at the late 20th and early 21st centuries as the golden years. Future generations will shake their heads over how we failed to recognize a good thing when we had it and how science was hijacked by politics, environmentalism, and greed. We would be better off spending all our dollars and efforts on maximizing energy sources, new and old, than trying to eliminate a gas that does far more good than harm.

Ice Age O/Ws

Cold weather kills more than warming

Singer and Avery 08

(S. Fred Singer is a professor of environmental science at the University at Virginia and was involved in the development of earth observation satellites, a chief scientist for the Department of Transportation and founder of the Science and Environmental Policy Project; Dennis Avery is the director for Global Food Issues at the Hudson Institute, *Unstoppable Global Warming*, 2008, Rowman and Littlefield Publishers Inc., pg. 214)

Global warming alarmists present the fairly simplistic theory that higher temperatures will drive more extreme weather events, and these events will raise human death rates. But, overall, cold weather is more effective at killing people than heat waves. Global warming would raise maximum summer temperatures modestly while it would raise winter minimum temperatures significantly. Both factors should help reduce human death rates.