# WARMING GOOD

## 1NC CO2 Good

### A. Reducing CO2 emissions causes starvation

Idso 1 (Craig, President of the Center for the Study of Carbon Dioxide & Global Change, “The Most Important Global Change,” CO2 Science Magazine, 2-21-1 [www.co2science.org/edit/v4\_edit/v4n8edit.htm](http://www.co2science.org/edit/v4_edit/v4n8edit.htm))

So where is our attention currently focused?  Unfortunately, it is focused on reducing anthropogenic CO2 emissions to the atmosphere, which is truly lamentable; for the continuation of those emissions is, ironically, our only real hope for averting the near-certain future global food shortfall that is destined to occur if the Kyoto Protocol Crowd gets its way with the world. But how would allowing anthropogenic CO2 emissions to take their natural course help to ameliorate future hunger?  The answer resides in the fact that elevated levels of atmospheric CO2 tend to reduce plant [transpiration](http://www.co2science.org/dictionary/define_t.htm#Transpiration) while simultaneously enhancing plant [photosynthesis](http://www.co2science.org/dictionary/define_p.htm#Photosynthesis), which two phenomena enable earth's vegetation to produce considerably more food per unit of water used in the food production process. Literally thousands of laboratory and field experiments - and that is no exaggeration - have verified this fact beyond any doubt whatsoever.  Indeed, this atmospheric CO2-derived blessing is as sure as death and taxes and as dependable as a mother's love.  But what do the climate-alarmist ideologues do about it?  They spurn it.  They deny it.  They try to reverse it, in fact.  And they do it to the detriment of all mankind. So just how bad is the problem?  We're glad you asked, for we've asked the same question ourselves (see our Journal Review [Will There Be Enough Food?](http://www.co2science.org/journal/2000/v3n29b1.htm)).  And the answer, as we report in our Editorial of [15 November 2000](http://www.co2science.org/edit/v3_edit/v3n31edit.htm), is *yes*, there will be enough, but just barely, and only if the CO2 content of the air is allowed to rise unimpeded by misguided attempts to curtail the burning of fossil fuels. What we have found (Idso and Idso, 2000) is that likely advancements in agricultural technology and expertise will only increase world food production by about two-thirds of what will be required to feed the expected human population of the globe fifty years hence.  But if the air's CO2 content continues to rise as typically projected for "business as usual" scenarios, the [aerial fertilization effect](http://www.co2science.org/dictionary/define_a.htm#Aerial fertilization effect) and the water use efficiency-promoting properties of the expected rise in atmospheric CO2 concentration will stimulate our crops to supply the final third of what will be required to meet our future dietary needs. Even under the best of conditions, however, the match-up between future world food supply and demand will be so close as to leave extremely little room for ineptitude or error in our plans for supplying the various staples required by the planet's expanding human family.  Therefore, the Precautionary Principle - rightly applied (see our Editorial [Prudence Misapplied](http://www.co2science.org/edit/v3_edit/v3n29edit.htm)) - demands we do everything possible to stave off the potential food insufficiency crisis our increasing numbers could well create fifty years from now.  And a crucial element of any policy devised to deal with this challenge must be to not interfere with the continuing evolution of earth's atmospheric CO2 concentration; for as described above, it is essential that the air's CO2 content continue to grow in the future as it has in the past. In concluding this essay, we return to the writings of Wallace for some final words of wisdom.  "There can be," he says, "no greater global challenge today on which physical and social scientists can work together than the goal of producing the food required for future generations."  And in this regard, he notes that a "concerted focus on improving water use efficiency … will increase the productivity of both rain fed and irrigated agriculture."  If this approach is taken, and if we do nothing unwise or counter-productive with respect to this effort, *then*, as Wallace states in his final sentence, "the prize is that more areas of the world, and especially those arid and semi-arid areas where population growth is greatest, will be able to sustain their future populations." Truly, the long-term future of the planet's less-developed and poorer countries resides in the energy policies of the world's wealthier industrialized nations; and upon the decisions these nations will shortly make about anthropogenic CO2 emissions hangs the fate of the less-fortunate rest of the world.  It is imperative that the leaders of *all* nations wake up to the reality of what *everyone* is facing, especially the poorer resource-limited countries with high rates of population growth, and do the right thing.  Don't unduly strive to limit any nation's CO2 emissions.  It will only hurt us all.

### And Extinction

CO2 Science Magazine 1 (“Anthropogenic CO2 Emissions Could Dramatically Increase Agricultural Production by Thwarting the Adverse Effects of Ozone Pollution,” 10-24-1 [www.co2science.org/edit/v4\_edit/v4n43edit.htm](http://www.co2science.org/edit/v4_edit/v4n43edit.htm))

Damage to crops caused by air pollutants is one of the major scourges of present-day agriculture.  How great are the production losses caused by these plant-debilitating agents?  In a recent study of the effects of ozone pollution in the Punjab region of Pakistan, Wahid et al. (2001) periodically applied a powerful ozone protectant to soybean plants growing in three different locations in the general vicinity of the city of Lahore - a suburban site, a remote rural site, and a rural roadside site - throughout two different growing seasons (one immediately post-monsoon and one the following spring or pre-monsoon).  The results were truly astounding.  At the suburban site, application of the ozone protectant increased the weight of seeds produced per plant by 47% in the post-monsoon season and by 113% in the pre-monsoon season.  At the remote rural site, the corresponding yield increases were 94% and 182%; and at the rural roadside site, they were 170% and 285%.  Averaged across all three sites and both seasons of the year, the mean increase in yield caused by countering the deleterious effects of this one major air pollutant was nearly 150%. Due to their somewhat surprising finding that "the impacts of ozone on the yield of soybean are larger in the rural areas around Lahore than in suburban areas of the city," the authors concluded "there may be substantial impacts of oxidants on crop yield across large areas of the Punjab."  In addition, they noted that earlier studies had revealed similar large ozone-induced losses in the productivity of local cultivars of wheat and rice.  Hence, it is clear that whatever could be done to reduce these massive crop losses - or, ideally, eliminate them altogether - would be a godsend to the people of Pakistan and the inhabitants of many other areas of the globe. Fortunately, such a savior is silently working its wonders throughout the entire world.  That of which we speak, of course, is the ongoing rise in the air's CO2 content, which counteracts the negative effects of ozone - and those of many other air pollutants (Allen, 1990; Idso and Idso, 1994) - by restricting the noxious molecule's entry into plant leaves via induced reduction of leaf stomatal apertures ([Reid and Fiscus, 1998](http://www.co2science.org/journal/1999/v2n10b3.htm)), and by ameliorating its adverse biochemical activities when it does penetrate vegetative tissues ([Reid et al., 1998](http://www.co2science.org/journal/1999/v2n21b1.htm)). In a number of studies of these beneficial consequences of atmospheric CO2 enrichment for the crop studied by Wahid et al., i.e., soybeans, it has been found that a nominal doubling of the air's CO2 concentration is sufficient to greatly reduce - and in some cases completely eliminate - the yield-reducing effects of ozone pollution (Heagle et al., [1998a](http://www.co2science.org/journal/1999/v2n13b3.htm) and [1998b](http://www.co2science.org/journal/1999/v2n13b5.htm); [Miller et al., 1998](http://www.co2science.org/journal/1999/v2n13b4.htm); Reid and Fiscus, 1998; Reid et al., 1998).  The same conclusion follows from the results of several studies that have looked at wheat in this regard ([Heagle et al., 2000](http://www.co2science.org/journal/2001/v4n23b1.htm); [McKee et al., 2000](http://www.co2science.org/journal/2000/v3n37b2.htm); [Pleijel et al., 2000](http://www.co2science.org/journal/2001/v4n16b3.htm); [Tiedemann and Firsching, 2000](http://www.co2science.org/journal/2000/v3n14b2.htm)).  In fact, the work of [Volin et al. (1998)](http://www.co2science.org/journal/1998/121598b4.htm) suggests that these CO2-induced benefits will likely be experienced by all plants.  As the researchers directly state in the title of their paper: "species respond similarly regardless of photosynthetic pathway or plant functional group." Think about the implications of these findings.  A doubling of the air's CO2 content could well double agricultural production in many areas of the world by merely eliminating the adverse effects of but one air pollutant, i.e., ozone.  Then, consider the fact that by the mid-point of the current century, we will likely face a food production crisis of unimaginable proportions (see our Editorials of [21 February 2001](http://www.co2science.org/edit/v4_edit/v4n8edit.htm) and [13 June 2001](http://www.co2science.org/edit/v4_edit/v4n24edit.htm)).  Finally, ask yourself what the Precautionary Principle has to say about this state of affairs (see our Editorial of [4 July 2001](http://www.co2science.org/edit/v4_edit/v4n27edit.htm)).  We conducted such an exercise in our review of the paper of [Hudak et al. (1999)](http://www.co2science.org/journal/2001/v4n10b2.htm), concluding that perhaps our new mantra should be: Free the Biosphere!  Let the air's CO2 content rise. And we still feel that way.  CO2 is the elixir of life.  It is one of the primary raw materials - the other being water - out of which plants construct their tissues; and it is essential to their existence and our existence.  Without more of it in the air, our species - as well as most of the rest of the planet's animal life - will not survive the 21st century intact.  The biosphere will continue to exist, but not as we know it; for most of its wild diversity of life will have been extinguished by mankind's mad rush to appropriate ever more land and water to grow the food required to feed itself (Tilman et al., 2001). So we say again, let the air's CO2 content rise.  It's the right thing to do, both scientifically and morally.

### B. Turn Ag Competitiveness- U.S is increasing agriculture now to combat large increase in demand - must increase output in the future to meet the demand and maintain U.S. competitiveness

US global change 2K (National Assessment Synthesis Team, US Global Change Research Program, nqa, “Climate Change Impacts on the United States The Potential Consequences of Climate Variability and Change Overview:  Agriculture)

Economic viability and competitiveness are major concerns for producers trying to maintain profitability as real commodity prices have fallen by about two-thirds over the last 50 years. Agricultural productivity has improved at over 1% per year since 1950, resulting in a decline in both production costs and prices. This trend maintains intense pressure on individual producers to continue to increase the productivity of their farms and to reduce costs of production. In this competitive economic environment, producers see anything that might increase costs or limit their markets as a threat to their viability. Issues of concern include regulatory actions that might increase costs, such as efforts to control the off-site consequences of soil erosion, agricultural chemicals, and livestock wastes; growing resistance to and restrictions on the use of genetically modified crops; extreme weather or climate events such as droughts and floods; new pests; and the development of pest resistance to existing pest control strategies. Future changes in climate will interact with all of these factors.

### B. Even organizations that are dedicated to find the consequences of climate change admit that climate change would have a large, positive effect on u.s. crops

US global change 2K (National Assessment Synthesis Team, US Global Change Research Program, nqa, “Climate Change Impacts on the United States The Potential Consequences of Climate Variability and Change Overview:  Agriculture)

It is likely that climate change, as defined by the scenarios examined in this Assessment, will not imperil the ability of the US to feed its population and to export foodstuffs. Results of this Assessment suggest that, at the national level, productivity of many major crops will likely increase under the climate scenarios used in these crop models. Crops showing generally positive results include cotton, corn for grain and silage, soybeans, sorghum, barley, sugar beets, and citrus fruits. Pastures also show positive results.For other crops, including wheat, rice, oats, hay, sugar cane, potatoes, and tomatoes, yields are projected to increase under some conditions and decrease under others. The crop models assume that the CO2 fertilization effect will be considerable (see box).

## CO2 Good- Famine Ext

### Warming increases agricultural production which eliminates famine

Moore 98 (Thomas Gale, PhD in economics from the University of Chicago and is a senior fellow at the Hoover Institution who specializes in international trade, deregulation, and privatization, “Global Warming: Try It, You Might Like It”, June 4, 1998 <http://www.cato.org/publications/commentary/global-warming-try-it-you-might-it>)

According to climatologists, the villain causing a warmer world is the unprecedented amount of carbon dioxide we keep pumping into the atmosphere. As high school biology teachers emphasize, plants absorb carbon dioxide and emit oxygen. Researchers have shown, moreover, that virtually all plants will do better in an environment enriched with carbon dioxide than in the current atmosphere, which contains only trace amounts of their basic food. In addition, warmer winters and nights would mean longer growing seasons. Combined with higher levels of CO2, plant life would become more vigorous, thus providing more food for animals and humans. Given a rising world population, longer growing seasons, greater rainfall, and an enriched atmosphere could be just the ticket to stave off famine and want.

## CO2 Good- Russian Famine

### Greening staves off famine in Russia

Michaels 1 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, "

Global Warming Produced a Greener, More Fruitful Planet”, September 13, 2001 http://www.cato.org/publications/commentary/global-warming-produced-greener-more-fruitful-planet)

Using a satellite designed to measure changes in vegetation, they found that the time of active growth has advanced as much as 18 days per year in Eurasia. (The freeze-free period averages around 170 days at latitude 40º.) In North America the results are more spotty, with a few areas increasing by up to 12 days. On our continent, the results are confounded by the well-known (to scientists, not to newspaper-readers) cooling trend in northeastern North America that has been going on for about 70 years. Zhou et al. attribute this "greening" (their word) to "global warming," because it matches areas that show maximum warming since 1980 in land-based climate records. In fact, the winter warming in the dead of Siberia has been quite striking for decades, and, everything else being equal, this will lengthen the growing season. (Last year's record cold merely proves that climate is a very variable thing.) Summer warming in Siberia has been less profound, a fact not generally disseminated because it doesn't support the popular global-warming-as-disaster paradigm. What isn't noted in the paper or the brief flurry of news reports -- there would probably be a bit more coverage if Zhou had written "global warming is killing the North Woods" -- is that the beginning of their satellite record, in 1981, corresponds in the Northern Hemisphere to the end of the coolest era of the last 70 years. The fact is that all analyses show a cooling of our hemisphere from roughly the mid-1940s to the late 1970s. During this climate spasm "global cooling" became popular. So this paper starts at an unusual point, but, unfortunately, that is when the satellite went up. If the satellite went up in, say, 1950, the changes it would have found in the growing season would have been much smaller. The contra is also true: According to Zhou's findings, if we had continued down that cooling spiral, the world north of 40º would now be much more barren than it was 20 years ago. It's quite reasonable to ask if human-induced global warming has saved the world from a food crisis. What really ticked off the greens about "The Greening of Planet Earth" were the many sound bites from prominent agricultural scientists about how the future atmosphere would be much more conducive for food production. But look at what NASA, which funded this study, now says about Zhou's work: "The pattern of high growth is especially noteworthy in boreal [northern] Eurasia...This includes the grasslands and croplands of south central Russia....[emphases added]." In other words, dreaded global warming will produce more food for Russia. Russians rightfully fear the cold. In 1972, near the bottom of the mid-century cooling (and around the height of global cooling fear) they were so short of food that they purchased just about every kernel of American grain. This sent grocery store prices here to alarming levels. By the end of the crop year 1972, world grain reserves stood at a stunningly low 19 days. Since we warmed up, those fears have become a thing of the past. Now food shortages are largely local and political, and commodity prices have been in the tank for years, reflecting vast supply compared to demand. So is this what global warming has wrought? It appears to have created a more comfortable planet with more food. The video was right. The greens were wrong. The world is greener.

## CO2 Good – Industry

### CO2 increases industrial production which keeps humanity going

Epstein 9 (Alex, director of the Center for Industrial Progress, alumnus of Duke University, where he studied philosophy and computer science, “CO2 Restrictions Threaten Human Life”, April 30http://www.aynrand.org/site/News2?page=NewsArticle&id=23195&news\_iv\_ctrl=2540)

“Carbon energy has been and remains vital to the industrial society that has doubled human life-expectancies, and, among a million other benefits, enables us to cope with all manner of changes in climate. “Right now,” Mr. Epstein pointed out, “carbon-based sources of energy produce the most, cheapest energy, period—while sunshine and wind gusts, despite decades of subsidies and propaganda, produce an expensive 1 percent of our energy. “If scientists and entrepreneurs can discover and implement superior sources that happen not to emit CO2, at better prices than today’s energy sources, great. But whether that happens or not, we need to recognize that our ‘health and welfare’ depend on free markets producing industrial-scale energy above all else—and that anyone who tries to shut down life-giving coal plants and oil rigs, in the name of avoiding bad weather, is an enemy of humanity.”

## Warming Long Timeframe

### Warming cannot even begin to do damage until 2060 and we will see benefits for at least 4 decades

Murphy 12(Robert, Ph.D. in economics New York University, analyst for Arthur Laffer at IER, “Nordhaus, Tol, and Climate-Change Economics: Turning Around the Conventional Wisdom”

Jul. 11, <http://www.masterresource.org/2012/07/nordhaus-tol-climate-economics-reconsidered/>)

Yet if we consult Tol’s paper—the very one cited by Nordhaus in support of the above quotation—we find that most economic studies find global warming will confer net benefits on humanity at least through the years 2050 – 2060. Only after we get at least another 2 degrees Celsius of warming (and that is compared to a recent baseline, not a preindustrial benchmark), do most studies in this literature say that the damages to certain parts of the world begin to overwhelm the benefits to other parts of the world.

## Nordhaus Indict

### Nordhaus uses misleading words and data—reject his bad scholarship

Murphy 12(Robert, Ph.D. in economics New York University, analyst for Arthur Laffer at IER, “Nordhaus, Tol, and Climate-Change Economics: Turning Around the Conventional Wisdom”

Jul. 11, <http://www.masterresource.org/2012/07/nordhaus-tol-climate-economics-reconsidered/>)

As I mentioned in my IER post, I hope the average reader will agree with me that Nordhaus’s summary of Tol’s findings was extremely misleading (perhaps unintentionally). I daresay the average person, relying on mainstream media treatment of the issue, has been led to believe that “the consensus” of experts believes climate change is right now causing incredible damage and will only get worse as time passes. And yet, the very person Nordhaus singled out as the leading scholar in the field, shows that the majority of the best available studies show global warming leading to net benefits at least for another four decades.

## CO2 Good – Laundry List

### CO2 and Flourocarbons benefit every aspect of life – laundry list backed by 150 years of empirics

Epstien 12 (Alex, alumnus of Duke University, director of the Center for Industrial Progress, Fellow at the Ayn Rand Institute specializing in energy issues, “Why We Should Love the Oil Companies (Straight talk from an industry outsider)”, Jul. 15, <http://www.masterresource.org/2012/06/love-oil-companies-educate/>)

We should never forget that the oil industry, whatever its problems (and most of those are caused by bad government policies) is the single most vital industry in the world. It has revolutionized agriculture; without oil and natural gas-based agriculture, we would not have the fertilizers, tractors, and transport that enable farmers to feed a record 7 billion people with the lowest malnutrition level in history. In other words, the oil industry solved world hunger. Wouldn’t that be profitable to point out? The oil industry has revolutionized health care. Every hospital lives and dies based on just-in-time transportation of supplies, sanitary plastic devices and disposables, and petroleum-based pharmaceuticals. Without hydrocarbon-based synthetic pesticides, the U.S. would still be cursed with insect-borne diseases, such as malaria, which afflict much of the undeveloped world. Wouldn’t that be profitable to point out? I could multiply the examples to every other industry, because every other industry benefits in proportion to the availability of cheap, plentiful, reliable, portable fuel–and that is what the oil industry works every day to bring to us. The benefits of oil are all around us. If most Americans truly understood these benefits, they would surely have a different view of the industry. They would think more like 1920s best-selling author Bruce Barton, who said, “My friends, it is the juice of the fountain of eternal youth…. It is health. It is comfort. It is success.” As the Founder and the Director of the Center for Industrial Progress, I make it my job to educate the public about the incredibly positive role energy and industry, particularly the oil industry, play in their lives. For the last five years, I have been giving speeches around the country, especially at universities, about how the oil industry produces the lifeblood of civilization, and about how we should value the industry and above all value its freedom to produce. You might expect that audiences would reject this message and write me off as an industry shill. But the exact opposite happens–because the truth is on my side and I don’t hide it or apologize for it. I explain to them that I came to my conclusions after studying carefully the relationship between oil and human life over the past 150 years, and welcome them to do the same.

## Asia Alt Cause

### Asia is a bigger emitter which makes the impact inevitable

Knappenberger 12 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “Asian Air Pollution Warms U.S More than Our GHG Emissions (More futility for U.S. EPA)” Jun. 7 <http://www.masterresource.org/2012/06/asian-air-pollution-warming/>)

But in the Teng et al. study, the authors find that, according to their climate model, the local heating of the atmosphere by the Asian carbon aerosols (which are quite good at absorbing sunlight) can impart changes to the character of the larger-scale atmospheric circulation patterns. And these changes to the broader atmospheric flow produce an effect on the weather patterns in the U.S. and thus induce a change in the climate here characterized by “0.4°C [surface air temperature] warming on average over the eastern US during winter and over almost the entire US during summer” averaged over the 2005–2024 period. While most of the summer warming doesn’t start to kick in until Asian carbonaceous aerosol emissions are upped in the model to 10 times what they are today, the winter warming over the eastern half of the country is large (several tenths of a °C) even at twice the current rate of Asian emissions. Now let’s revisit just how much “global warming” that stringent U.S. greenhouse gas emissions reductions may avoid averaged across the country. In my Master Resource post “Climate Impacts of Waxman-Markey (the IPCC-based arithmetic of no gain)” I calculated that a more than 80% reduction of greenhouse gas emissions in the U.S. by the year 2050 would result in a reduction of global temperatures (from where they otherwise would be) of about 0.05°C. Since the U.S. is projected to warm slightly more than the global average (land warms faster than the oceans), a 0.05°C of global temperature reduction probably amounts to about 0.075°C of temperature “savings” averaged across the U.S., by the year 2050. Comparing the amount of warming in the U.S. saved by reducing our greenhouse gas emissions by some 80% to the amount of warming added in the U.S. by increases in Asian black carbon (soot) aerosol emissions (at least according to Teng et al.) and there is no clear winner. Which points out the anemic effect that U.S. greenhouse gas reductions will have on the climate of the U.S. and just how easily the whims of foreign nations, not to mention Mother Nature, can completely offset any climate changes induced by our greenhouse gas emissions reductions. And even if the traditional form of air pollution (e.g., soot) does not increase across Asia (a slim chance of that), greenhouse gases emitted there certainly will. For example, at the current growth rate, new greenhouse gas emissions from China will completely subsume an 80% reduction in U.S. greenhouse gas emission in just over a decade. Once again, pointing out that a reduction in domestic greenhouse gases is for naught, at least when it comes to mitigating climate change. So, what’s the point, really, of forcing Americans into different energy choices? As I have repeatedly pointed out, nothing we do here (when it comes to greenhouse gas emissions) will make any difference either domestically, or globally, when it comes to influences on the climate. What the powers-that-be behind emissions reduction schemes in the U.S. are hoping for is that 1) it doesn’t hurt us too much, and 2) that China and other large developing nations will follow our lead.

## Warming Good - Disease

### Warmer temperatures actually decrease the risk of disease

Moore 98 (Thomas Gale, PhD in economics from the University of Chicago and is a senior fellow at the Hoover Institution who specializes in international trade, deregulation, and privatization, “Global Warming: Try It, You Might Like It”, June 4, 1998 <http://www.cato.org/publications/commentary/global-warming-try-it-you-might-it>)

The doomsayers have predicted that a warmer world would inflict tropical diseases on Americans. They neglect to mention that those diseases, such as malaria, cholera and yellow fever, were widespread in the United States in the colder 19th century. Their absence today is attributable not to a climate unsuitable to their propagation but to modern sanitation and the American lifestyle, which prevent the microbes from getting a foothold. It is actually warmer along the Gulf Coast, which is free of dengue fever, than on the Caribbean islands where the disease is endemic. My own research shows that a warmer world would be a healthier one for Americans and would cut the number of deaths in the U.S. by about 40,000 per year, roughly the number killed on the highways.

## Temperature Decreasing

### Temperatures have been decreasing since 2002

Knappenberger 9 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “Global Warming—Not All It Is Made Out to Be” Jan. 7, [www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/](http://www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/))

In last Friday’s Wall Street Journal (Jan. 2, 2008), Science Journal editor Robert Lee Hotz reviewed the climate of 2008 and concluded that despite a relatively cool year, all signs were go for anthropogenic global warming proceeding at a rapid and destructive clip—perhaps even faster than climate models envisioned. Hotz’s review was extremely selective, with the effect of keeping the specter of catastrophic global warming alive and well, in the face of mounting evidence that it has, in fact, become gravely ill. A closer look at the recent behavior of global temperatures indicates that all is not well with climate-model projections of alarming climate change. 2008 added another year to a lengthening string in which the rate of global temperature rise has been far beneath model predictions showing that natural variability still plays a large role in everyday weather and climate. Man-made global warming has taken a back seat, at least temporarily, in driving climate. The global average temperature in 2008 was ~0.2°F lower than it was in 2007 (the exact amount depends on whom you ask). Two-tenths of a degree may not sound like much, but consider that the best computer models constructed to mimic how our climate operates predict that as a result of our greenhouse gas emissions, the global average temperature ought to be rising at a rate of about 0.2°F every 5 years or so. A drop of two-tenths of a degree is a major step in the wrong direction. Obviously, one year is too short a time to assess any climate trend or model. Natural variations in the earth’s weather/climate system are large enough to insure that global average temperatures do not smoothly step from one year to the next—even during “global warming.” So we must look over the longer term to get a better idea of what is going on. Figure 1 shows the annual departures of the global temperature from the average value for the past three decades. (The data are from the University of East Anglia Climate Research Unit dataset). Clearly, over the past 30 years, global temperatures have risen overall. But, over the past 12 years, global temperatures haven’t budged. In the last six years, temperatures have actually fallen

## Temperature Not Anthro

### Nature regulates the temperature on its own- oceans and atmosphere prove

Knappenberger 9 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “Global Warming—Not All It Is Made Out to Be” Jan. 7, [www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/](http://www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/))

Much of this recent temperature behavior can be attributed to the timing of natural cycles and variations in the earth’s climate that are related to large-scale ocean and atmospheric circulation patterns in the Atlantic and Pacific oceans—phenomena such as the Atlantic Multidecadal Oscillation, the Pacific Decadal Oscillation, and the cycles of El Niño/La Niña cycles—and possibly to a small influence from solar variations. These natural influences can be tracked back in the climate record for hundreds of years and, as such, provide strong evidence that they are true components of the earth’s climate and not simply manifestations of recent anthropogenic global climate change. Compare the observed temperature behavior (Figure 1) to the projections of future global surface temperatures made by climate models incorporating increases in the human emissions of greenhouse gases (Figure 2). Notice that the temperature projections made by climate models tend to rise steadily or in some cases accelerate a small amount with time during the first half of the 21st century—a condition opposite to recent observations.

## Models Fail

### Models fail- to complex for computing and have an incomplete understanding of emissions and weather

Knappenberger 9 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “Global Warming—Not All It Is Made Out to Be” Jan. 7, [www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/](http://www.masterresource.org/2009/01/global-warming—not-all-it-is-made-out-to-be/))

There are several possible reasons for this recent failure of the climate models. The first is that our scientific understanding of the workings of the earth’s climate system is incomplete. Important issues such as how clouds respond to changes in the earth’s temperature and human emissions are simply not well understood at this time. The second is that many processes are too complex to be thoroughly described in the models and/or operate at scales that are too small to be handled in climate models run on today’s best computers. In other words, existing computer power is not great enough to include all of the necessary details and therefore may be getting some things wrong. And third—in a sort of quasi-combination of the first two—a unique coincidence of “weather” events has occurred which has acted to offset much of the warming pressure from increasing greenhouse gas concentrations. However, models tell us that the likelihood of such an occurrence is growing exceedingly low as the string of years with a lack of global warming continues. The net result of these combined problem areas is less-than-perfect models of our past and present climate (as evidenced by recent global temperature behavior) and unreliable projections of our climate to come. Instead of catastrophic climate changes involving rapid temperature increases, an accelerating sea-level rise, and a growing ferocity of hurricanes, we observe a slowing rate of global warming (as seen in Figure 1), a modest sea-level rise (e.g., Holgate, 2007), and hurricane behavior less related to global warming than to natural climate variations (e.g., Knutson et al., 2008). Other observed changes, such as increases in weather-related damages and destruction, are improperly attributed to changes in climate because they are thoroughly explained by increases in population and wealth (e.g., Pielke Jr., et al., 2008)—in other words, there are more material things getting in the way of naturally occurring storm systems.

### Warming not real- flawed models.

Leyland-12 (Bryan Leyland is a founder member of the New Zealand Climate Science Coalition and an electrical engineer. “Temperature records say warming not happening”; The Dominion Post :6/16/12;http://www.lexisnexis.com.turing.library.northwestern.edu/hottopics/lnacademic/)

THERE is a widespread belief that the increase in carbon dioxide concentrations has caused the world to warm steadily. We are constantly told that this warming will continue and it will be disastrous. Before we accept these statements we should analyse the recent temperature records and the history of past climatic changes.¶ "Climate change" - more properly referred to as "man- made global warming" - is based on an unproven hypothesis that man-made carbon dioxide causes global warming. The evidence is that CO2 levels have increased steadily but there has been no significant warming of the world for the last 10 to 15 years. This proves that carbon dioxide does not cause dangerous warming.¶ All the climate models supported by the Intergovernmental Panel on Climate Change (IPCC) predicted a steady rise in temperature of 2 degrees to 6 degrees per century caused by increasing concentrations of CO2 and other greenhouse gases. They were wrong: all five leading temperature records - both surface and satellite - show that temperatures over the last 10 to 15 years have been essentially constant. The figure shows the temperature record from the Hadley Centre in Britain. It shows there has been no warming over the past 10 years and an insignificant amount of warming over the past 15 years.¶ CO2-driven warming happens immediately and there is no mechanism that could delay the effect. It is claimed that lack of warming is due to "natural effects", yet none of the IPCC scientists can explain exactly what these large natural causes are. If the models were any good, their predictions would be accurate. According to the IPCC, ". . . the long-term prediction of future climate states is not possible". Doesn't that pretty much say it all?

## Emissions No Increase Temperature

### Temperature has decreased during times of high emissions

Knappenberger 9 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “What Does the Last Decade Tell Us about Global Warming? (Hint: the ‘skeptics' have the momentum)” Sept. 28, <http://www.masterresource.org/2009/09/what-does-the-last-decade-tell-us-about-global-warming/>)

There has been a flurry of activity in recent weeks in the discussion as to the significance (scientific, political, social) of the evolution of the global average surface temperature during the past 10 years or so. For those of you who don’t know, the surface temperature of the globe, as a whole, has not warmed-up by anyone’s calculation since at least the turn of the century (January 2001) and depending on your dataset and statistical technique of choice, perhaps as far back as January 1997. And all of this non-warming occurred over a period of time during which the global emissions of CO2 increased faster than ever before (thanks primarily to China). In fact, anthropogenic greenhouse-gas forcing is about 5 percent greater now than a decade ago (about 16 parts per million). To many folks who have, for years, been fed a constant course of “the-world-is-heating-up-faster-than-ever-before-and-you-are-the-cause,” 9 to 12 years of no warming at all seems to indicate that something is amiss with this mantra. This was reflected in a Gallup Poll last spring, which found the highest percentage yet of people who think that “global warming” is being “exaggerated.” And this number has been growing.

## No ! to Warming – Adaptation

### Industry has adapted from the horse and buggy, the industrial revolution, and the automobile- the weather is just another adaptable scenario

Lockitch 8 (Keith, PhD in Physics from the University of Wisconsin at Milwaukee and is a fellow at the Ayn Rand Center for Individual Rights, “Frontline Heats Up Global Warming Alarmism”, Oct. 28 http://www.aynrand.org/site/News2?page=NewsArticle&id=21731&news\_iv\_ctrl=2546)

“Government policies aimed at severely restricting carbon emissions would inflict a major blow to the economy. Industrial-scale energy is an indispensable, life-saving value, and currently there is simply no practical way to produce abundant carbon-free energy. Nuclear power could generate substantial amounts of electricity, but environmentalists have consistently fought it tooth and nail. And even nuclear can’t fuel the internal combustion engines of the world’s 800 million oil-powered vehicles. “The more important point is that there is no need whatsoever to restrict carbon emissions,” said Lockitch. "For one thing, the science is far from 'settled' as to whether human activity is having any discernible impact on the climate--despite the media's constant assertion that it is. But even if we are causing large-scale changes to the climate--this is not a planetary emergency. If individuals on the free market can smoothly absorb the major transitions that occurred in moving from the horse and buggy to the automobile or the rapid population growth that accompanied the Industrial Revolution, they can adapt to large-scale climate change. The freer we are from the burdens of government intervention, the more we can continue to produce wealth, economic growth, and the means of adapting to whatever changes occur, if any. “The irony is that the very policies that people are pushing for in the name of fighting global warming--such as a massive expansion of government control over the production and consumption of energy--would severely reduce our ability to cope with nature. This would inflict upon us an economic catastrophe far worse than anything the climate could deliver.

## AT: Rising Sea Level

### It is containable- cheap and easy to build

Moore 98 (Thomas Gale, PhD in economics from the University of Chicago and is a senior fellow at the Hoover Institution who specializes in international trade, deregulation, and privatization, “Global Warming: Try It, You Might Like It”, June 4, 1998 <http://www.cato.org/publications/commentary/global-warming-try-it-you-might-it>)

A slowly rising sea level constitutes the only significant drawback to global warming. The best guess of the international scientists is that oceans will rise about 2 inches per decade. The cost to Americans of building dikes and constructing levees to mitigate the damage from rising seas would be less than $1 billion per year, an insignificant amount compared to the likely gain of over $100 billion for the American people as a whole. Let's not rush into costly programs to stave off something that we may like if it occurs. Warmer is better; richer is healthier; acting now is foolish.

## AT: Heat Waves

### They are killing fewer people every year- France proves

Michaels 11 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, “The Paradox of Urban (and Global) Warming”, June 10, 2011 <http://www.cato.org/publications/commentary/paradox-urban-global-warming>)

Before you go to the "comments" and blast me with the European heat wave of 2003 or the Chicago disaster in 1995, read on. The 2003 heat wave in Europe was devastating. In France alone, and very dependent on the way you count things, it appears there were about 35,000 excess deaths. That heat wave was a lulu, with European temperatures about three standard deviations above the average, something that has a 1-in-333 chance of occurring averaged over your state or province. Given that there are a lot of places of similar size on the planet, such an anomaly can usually be found somewhere. In 2003, that somewhere just happened to be at the epicenter of global warming angst. Then there was the great French heat wave of 2006. Whoops. Don't know about that one? Climatically, it was pretty comparable, but far fewer French fried. A. Fouillet and his team of researchers wrote this up in a 2008 paper in the International Journal of Epidemiology. They started off with a simple (i.e. logical and testable) model relating temperature to mortality and found that something in addition to the heat killed a lot of people in 2003. While their model predicted about 17 deaths per 100,000, the observed rate was 21 per 100,000, or about nearly 7,000 bodies. (There's plenty of speculation on the cause, with fingers pointed at France's August recess, when everyone — including health care workers — takes to the beach or the hills and leaves the old folks at the non-airconditioned home) In 2006, their model showed nearly 4,500 fewer deaths than expected. What the French did was (begrudgingly) emulate urban Americans. They adapted. The government bought air conditioning (formerly a crass Yankee invention) for retirement homes. They implemented a National Heat Wave Plan that keeps tabs on the elderly, who were left to swelter in 2003. They set up cooling shelters for those without A/C.

### Heat related mortality is dropping like a stone- 30 years of data proves

Michaels 11 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, “The Paradox of Urban (and Global) Warming”, June 10, 2011 <http://www.cato.org/publications/commentary/paradox-urban-global-warming>)

The official (and silly) definition of "normal" temperature is the average for the past 30 years. In a growing urban environment (which includes suburban sprawl) that number is likely to be lower than what it is now. As a result, cities are inadvertently testing a dear hypothesis of my greener friends: that global warming will result in increasing heat-related mortality. Those who have read Freakonomics can see this hanging curveball. Global warming should reduce urban mortality as heat waves become more frequent. I've done a bit of work in this area. Robert Davis, a former colleague at the University of Virginia, and I examined three decades of heat-related mortality data from the Centers for Disease Control for the 28 largest U.S. cities. We then teamed up with a UVa medical statistician, Wendy Novicoff, who made sure we adjusted for different demographics between cities; we did this because the elderly and infants are most susceptible to heat-related mortality, and we wanted to compare disproportionately old cities (like Phoenix) with disproportionally young ones (like Seattle). After all was said and done, we found that heat-related mortality is dropping like a stone in almost every major urban area in the nation.

## AT: Warming -> Economic Collapse

### Most industries would be fine

Moore 98 (Thomas Gale, PhD in economics from the University of Chicago and is a senior fellow at the Hoover Institution who specializes in international trade, deregulation, and privatization, “Global Warming: Try It, You Might Like It”, June 4, 1998 <http://www.cato.org/publications/commentary/global-warming-try-it-you-might-it>)

Most economic activities would be unaffected by climate change. Manufacturing, banking, insurance, retailing, wholesaling, medicine, educational, mining, financial and most other services are unrelated to weather. Those activities can be carried out in cold climates with central heating or in hot climates with air conditioning. Certain weather-related or outdoor-oriented services, however, would be affected. Transportation would benefit generally from a warmer climate since road transport would suffer less from slippery or impassable highways. Airline passengers, who often endure weather-related delays in the winter, would gain from more reliable and on-time service.

## AT: Warming -> Extinction

### Warming has been exaggerated too long- 21st century decisionmakers must use objective climate data

Michaels 3 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, “Posturing and Reality on Warming” October 16, 2003 <http://www.cato.org/publications/commentary/posturing-reality-warming>)

But, after a decade-and-a-half of reality, which resists exaggeration, it has become apparent that warming is indeed pretty modest. Jim wrote this in the Proceedings of the National Academy of Sciences in 2001: "Future global warming can be predicted much more accurately then is generally realized ... we predict additional warming in the next 50 years of 0.75 ºC [plus or minus] 0.25ºC, a warming rate of 0.15ºC [plus or minus] 0.05ºC per decade." This warming rate -- the real one -- is approximately 4 times less than the lurid top figure widely trumpeted by the United Nations and repeated ad infinitum in the press. And, just to drive my point home, here's what Mr. Hansen wrote last month in his latest paper in the online journal Natural Science: Emphasis on extreme scenarios may have been appropriate at one time, when the public and decision makers were relatively unaware of the global warming issue Now, however, the need is for demonstrably objective climate ... scenarios consistent with what is realistic under current conditions. ...

## AT: Immediate impact

### For the next 100 years at least, warming will make the winters warmer and the summers cooler which makes the climates more livable

Moore 98 (Thomas Gale, PhD in economics from the University of Chicago and is a senior fellow at the Hoover Institution who specializes in international trade, deregulation, and privatization, “Global Warming: Try It, You Might Like It”, June 4, 1998 <http://www.cato.org/publications/commentary/global-warming-try-it-you-might-it>)

The weather can, of course, be too warm, but that is unlikely to become a major problem if the globe warms. Even though it is far from certain that the temperature will rise, the Intergovernmental Panel on Climate Change (the U.N. body that has been studying this possibility for more than a decade) has forecast that, by the end of the next century, the world's climate will be about 3.6° Fahrenheit warmer than today and that precipitation worldwide will increase by about 7 percent. The scientists who make up this body also predict that most of the warming will occur at night and during the winter. In fact, records show that, over this century, summer highs have actually declined while winter lows have gone up. In addition, temperatures are expected to increase the most towards the poles. Thus Minneapolis should enjoy more warming than Dallas; but even the Twin Cities should find that most of their temperature increase will occur during their coldest season, making their climate more livable. Warmer winters will produce less ice and snow to torment drivers, facilitating commuting and making snow shoveling less of a chore. Families will have less need to invest in heavy parkas, bulky jackets, earmuffs and snow boots. Department of Energy studies have shown that a warmer climate would reduce heating bills more than it would boost outlays on air conditioning. If we currently enjoyed the weather predicted for the end of the next century, expenditures for heating and cooling would be cut by about $12.2 billion annually.

## AT: Temperature Rises

### The temperature is only going to rise three quarters of a degree within the foreseeable future-physics prove

Michaels 3 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, “Posturing and Reality on Warming”

October 16, 2003 <http://www.cato.org/publications/commentary/posturing-reality-warming>)

Here's what every American needs to know about global warming. Contrary to almost every news report and every staged hearing, including one held by Mr. McCain on Oct. 1, scientists know quite precisely how much the planet will warm in the foreseeable future, a modest three-quarters of a degree (C), plus or minus a mere quarter-degree, according to scientific figures as disparate as this author and NASA scientist James Hansen. The uncertainty is so small, in fact, that publicly crowing this figure is liable to result in a substantial cut in our research funding, which is why the hundreds of other scientists who know this have been so reluctant to disgorge the truth in public. All this has to do with basic physics, which isn't real hard to understand. It has been known since 1872 that as we emit more and more carbon dioxide into our atmosphere, each increment results in less and less warming. In other words, the first changes produce the most warming, and subsequent ones produce a bit less, and so on. But we also assume carbon dioxide continues to go into the atmosphere at an ever-increasing rate. In other words, the increase from year-to-year isn't constant, but itself is increasing. The effect of increasing the rate of carbon dioxide emissions, coupled with the fact that more and more carbon dioxide produces less and less warming compels our climate projections for the future warming to be pretty much a straight line. Translation: Once human beings start to warm the climate, they do so at a constant rate. And yes, it's a sad fact that it took $10 billion of taxpayer money to "prove" something so obvious it can be written in a mere 100 words. So, once you demonstrate humans are indeed warming the climate, you know the amount of future warming. This is where the greens (and Mr. Lieberman and Mr. McCain) made a major miscalculation: They assumed that once you could demonstrate a human influence on the Earth's surface temperature that people would be panicked into something like Kyoto. But, in reality, people are smart enough to know that a modest warming is a likely benefit, which is why they tend to move South as soon as they can afford it. Some more pretty straight physics, also known for a long time, is that human warming will be strongest and most obvious in very cold and dry air, such as in Siberia and northwestern North America in the dead of winter. And, not surprisingly, that's where the lion's share of warming is, which proves the human influence. (This is also one of the reasons Vladimir Putin opposes the Kyoto Protocol: Warming Siberia just doesn't seem so bad to the Russians). So, now having proven humans are warming the atmosphere, ask the simple question: Is the warming indeed the straight-line predicted by $10 billion dollars?

### No global warming now- climate cycle predicts global cooling.

Leyland-12 (Bryan Leyland is a founder member of the New Zealand Climate Science Coalition and an electrical engineer. “Temperature records say warming not happening”; The Dominion Post :6/16/12;http://www.lexisnexis.com.turing.library.northwestern.edu/hottopics/lnacademic/)

The alternative - and much simpler - explanation is that the climate has natural cycles and that we are just over the peak of a cycle and, probably, at the beginning of a decline. Nicola Scafetta, a research scientist at Duke University in the US, has analysed past climatic cycles and made a model that without any tuning has accurately replicated temperature changes over the last 100 years. It also predicts that cooling is imminent. Don Easterbrook, at Western Washington University in the US, and other scientists have carried out similar analyses with similar results. Most of these studies have been ignored or dismissed by the scientists associated with the IPCC.¶ Studies of sunspot cycles strongly support imminent global cooling. They show that a long sunspot cycle is always followed by cooling. The last cycle lasted 12.5 years and the previous one, 9.5 years. This tells us that about 1 degree of cooling is to be expected during the current cycle.¶ Dr Jim Renwick and Dr David Wratt, of Niwa, who are lead authors for the IPCC, have corresponded with me and appear to accept that the world has not warmed for about 10 years. It appears they do not know why the world is failing to warm in line with the model predictions. Yet they still tell the Government that man-made global warming is real and dangerous. Instead of publicly admitting that the world has not warmed as predicted, they divert the discussion to other effects that, they claim, demonstrate warming. But the temperature records say it isn't happening.

## AT: Our Models are Legit

### They are naïve, scientists want to keep their funding and will say anything to do it- NASA proves

Michaels 3 (Patrick J., Ph.D. in ecological climatology from the University of Wisconsin at Madison and is a senior fellow at the CATO Institute, “Posturing and Reality on Warming” October 16, 2003 <http://www.cato.org/publications/commentary/posturing-reality-warming>)

Here's what every American needs to know about global warming. Contrary to almost every news report and every staged hearing, including one held by Mr. McCain on Oct. 1, scientists know quite precisely how much the planet will warm in the foreseeable future, a modest three-quarters of a degree (C), plus or minus a mere quarter-degree, according to scientific figures as disparate as this author and NASA scientist James Hansen. The uncertainty is so small, in fact, that publicly crowing this figure is liable to result in a substantial cut in our research funding, which is why the hundreds of other scientists who know this have been so reluctant to disgorge the truth in public. All this has to do with basic physics, which isn't real hard to understand. It has been known since 1872 that as we emit more and more carbon dioxide into our atmosphere, each increment results in less and less warming. In other words, the first changes produce the most warming, and subsequent ones produce a bit less, and so on. But we also assume carbon dioxide continues to go into the atmosphere at an ever-increasing rate. In other words, the increase from year-to-year isn't constant, but itself is increasing. The effect of increasing the rate of carbon dioxide emissions, coupled with the fact that more and more carbon dioxide produces less and less warming compels our climate projections for the future warming to be pretty much a straight line. Translation: Once human beings start to warm the climate, they do so at a constant rate. And yes, it's a sad fact that it took $10 billion of taxpayer money to "prove" something so obvious it can be written in a mere 100 words. So, once you demonstrate humans are indeed warming the climate, you know the amount of future warming. This is where the greens (and Mr. Lieberman and Mr. McCain) made a major miscalculation: They assumed that once you could demonstrate a human influence on the Earth's surface temperature that people would be panicked into something like Kyoto. But, in reality, people are smart enough to know that a modest warming is a likely benefit, which is why they tend to move South as soon as they can afford it. Some more pretty straight physics, also known for a long time, is that human warming will be strongest and most obvious in very cold and dry air, such as in Siberia and northwestern North America in the dead of winter. And, not surprisingly, that's where the lion's share of warming is, which proves the human influence. (This is also one of the reasons Vladimir Putin opposes the Kyoto Protocol: Warming Siberia just doesn't seem so bad to the Russians). So, now having proven humans are warming the atmosphere, ask the simple question: Is the warming indeed the straight-line predicted by $10 billion dollars? As shown in our chart, it couldn't be straighter. Since the warming of the excessively cold air of winter began in earnest (how too bad), the deviations from a straight-line are vanishingly small, and projected future warming is right at the lower limit projected by the United Nations. Before sending me the hate mail claiming scientists would never exaggerate for political effect, let me submit it's not just my idea this has been going on. Back in 1988, NASA's Mr. Hansen lit the bonfire of the greenhouse vanities with some pretty incendiary testimony on the first day of summer, in the middle of a terrible and hot drought in the Midwestern and Eastern U.S. He later wrote he did this because he felt the need to call global warming to the attention of the public and the president. But, after a decade-and-a-half of reality, which resists exaggeration, it has become apparent that warming is indeed pretty modest. Jim wrote this in the Proceedings of the National Academy of Sciences in 2001: "Future global warming can be predicted much more accurately then is generally realized ... we predict additional warming in the next 50 years of 0.75 ºC [plus or minus] 0.25ºC, a warming rate of 0.15ºC [plus or minus] 0.05ºC per decade." This warming rate -- the real one -- is approximately 4 times less than the lurid top figure widely trumpeted by the United Nations and repeated ad infinitum in the press. And, just to drive my point home, here's what Mr. Hansen wrote last month in his latest paper in the online journal Natural Science: Emphasis on extreme scenarios may have been appropriate at one time, when the public and decision makers were relatively unaware of the global warming issue Now, however, the need is for demonstrably objective climate ... scenarios consistent with what is realistic under current conditions. ...

## AT: Warming Cause Temp Decrease

### Of course that is what you are going to say instead of looking for what makes our climate tick

Knappenberger 9 (Chip, M.S. degree in Environmental Sciences University of Virginia and spent 10 years with the Virginia State Climatology Office and 13 years with New Hope Environmental Services, Inc., “What Does the Last Decade Tell Us about Global Warming? (Hint: the ‘skeptics' have the momentum)” Sept. 28, <http://www.masterresource.org/2009/09/what-does-the-last-decade-tell-us-about-global-warming/>)

In its recent update of its global-warming science material, the Pew Center included a list of climate “misconceptions.” Among them was this one: The Misconception: The last few years have been cooler, so global warming can’t be real; Or, Global warming stopped in 1998; Or, The world has been cooling for the past decade. Pew reported that “The Reality” was: The climate is defined by long-term averages in global temperature and other climate metrics, and those are still increasing. This response basically avoided taking the original contention head-on. In fact, global warming has stopped. The question, thus, needs to be: “Since the average global surface temperature has remained relatively unchanged for the past decade or so, what does this mean for our understanding of what drives temperature changes, and what we may expect in the future?” The answer to this question could be that there is something wrong with our scientific understanding of what makes the climate tick—or at least how this understanding is translated into the computer code of climate models—which of course would have all sorts of implications. So, instead of going there, the primary effort to-date has been to try to demonstrate that there actually is no problem at all—that this lack of temperature rise is just what you would expect to occur with “global warming,” to go along with other expectations such as increasing sea ice in the Southern Ocean, increased ice accumulation across Antarctica (or should that be decreasing ice accumulation across Antarctica—I guess it all depends on what the latest study shows), more precipitation (or less depending on which is currently making the news), more hurricanes (well, not more in number, but more intense, or if not more intense, then they’ll be bigger in areal extent, or maybe…), cold outbreaks (when they occur, warm outbreaks otherwise), etc.

# WARMING BAD

## Warming Real/Happening Now

### Warming is real.

Meyer- 12 (Warren Meyer, writer at Forbes, “Understanding the Global Warming Debate” Forbes; 2/9/12; http://www.forbes.com/sites/warrenmeyer/2012/02/09/understanding-the-global-warming-debate/4/)

¶ In parallel with this theoretical work, scientists are looking for confirmation of the theory in observations. They have a variety of ways to measure the temperature of the Earth, all of which have shown warming over the past century. With this warming in hand, they then attempt to demonstrate how much of this warming is from CO2. The IPCC believes that much of past warming was from CO2, and recent work by IPCC authors argues that only exogenous effects prevented CO2-driven warming from being even higher.¶ ¶ This is just a summary. We will walk through each step in turn. The first step in the theory is the basic greenhouse gas theory — that CO2 will raise the temperature of the Earth as its concentration increases (through a process of absorption and re-radiation that we will not get into).¶ ¶ Its probably irresponsible to call anything in a science so young as climate “settled,” but the fact that increased atmospheric CO2 will warm the Earth by some amount is pretty close to being universally accepted.

### Warming now- models prove.

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

The threat of climate change is an increasingly important environmental issue for the globe. Because the economic questions involved have received relatively little attention, I have been writing a nontechnical book for people who would like to see how market-based approaches could be used to formulate policy on climate change. When I showed an early draft to colleagues, their response was that I had left out the arguments of skeptics about climate change, and I accordingly addressed this at length.¶ But one of the difficulties I found in examining the views of climate skeptics is that they are scattered widely in blogs, talks, and pamphlets. Then, I saw an opinion piece in The Wall Street Journal of January 27, 2012, by a group of sixteen scientists, entitled “No Need to Panic About Global Warming.” This is useful because it contains many of the standard criticisms in a succinct statement. The basic message of the article is that the globe is not warming, that dissident voices are being suppressed, and that delaying policies to slow climate change for fifty years will have no serious economic or environment consequences.¶ My response is primarily designed to correct their misleading description of my own research; but it also is directed more broadly at their attempt to discredit scientists and scientific research on climate change.1 I have identified six key issues that are raised in the article, and I provide commentary about their substance and accuracy. They are:¶ • Is the planet in fact warming?¶ • Are human influences an important contributor to warming?¶ • Is carbon dioxide a pollutant?¶ • Are we seeing a regime of fear for skeptical climate scientists?¶ • Are the views of mainstream climate scientists driven primarily by the desire for financial gain?¶ • Is it true that more carbon dioxide and additional warming will be beneficial?¶ As I will indicate below, on each of these questions, the sixteen scientists provide incorrect or misleading answers. At a time when we need to clarify public confusions about the science and economics of climate change, they have muddied the waters. I will describe their mistakes and explain the findings of current climate science and economics.¶ 1.¶ The first claim is that the planet is not warming. More precisely, “Perhaps the most inconvenient fact is the lack of global warming for well over 10 years now.”¶ It is easy to get lost in the tiniest details here. Most people will benefit from stepping back and looking at the record of actual temperature measurements. The figure below shows data from 1880 to 2011 on global mean temperature averaged from three different sources.2 We do not need any complicated statistical analysis to see that temperatures are rising, and furthermore that they are higher in the last decade than they were in earlier decades.3¶ One of the reasons that drawing conclusions on temperature trends is tricky is that the historical temperature series is highly volatile, as can be seen in the figure. The presence of short-term volatility requires looking at long-term trends. A useful analogy is the stock market. Suppose an analyst says that because real stock prices have declined over the last decade (which is true), it follows that there is no upward trend. Here again, an examination of the long-term data would quickly show this to be incorrect. The last decade of temperature and stock market data is not representative of the longer-term trends.¶ The finding that global temperatures are rising over the last century-plus is one of the most robust findings of climate science and statistics.¶

### Climate change must be addressed now- cost overruns later.

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

A final point concerns economic analysis. The sixteen scientists argue, citing my research, that economics does not support policies to slow climate change in the next half-century:¶ A recent study of a wide variety of policy options by Yale economist William Nordhaus showed that nearly the highest benefit-to-cost ratio is achieved for a policy that allows 50 more years of economic growth unimpeded by greenhouse gas controls. This would be especially beneficial to the less-developed parts of the world that would like to share some of the same advantages of material well-being, health and life expectancy that the fully developed parts of the world enjoy now. Many other policy responses would have a negative return on investment. And it is likely that more CO2 and the modest warming that may come with it will be an overall benefit to the planet.¶ On this point, I do not need to reconstruct how climate scientists made their projections, or review the persecution of Soviet geneticists. I did the research and wrote the book on which they base their statement. The skeptics’ summary is based on poor analysis and on an incorrect reading of the results.¶ The first problem is an elementary mistake in economic analysis. The authors cite the “benefit-to-cost ratio” to support their argument. Elementary cost-benefit and business economics teach that this is an incorrect criterion for selecting investments or policies. The appropriate criterion for decisions in this context is net benefits (that is, the difference between, and not the ratio of, benefits and costs).¶ This point can be seen in a simple example, which would apply in the case of investments to slow climate change. Suppose we were thinking about two policies. Policy A has a small investment in abatement of CO2 emissions. It costs relatively little (say $1 billion) but has substantial benefits (say $10 billion), for a net benefit of $9 billion. Now compare this with a very effective and larger investment, Policy B. This second investment costs more (say $10 billion) but has substantial benefits (say $50 billion), for a net benefit of $40 billion. B is preferable because it has higher net benefits ($40 billion for B as compared with $9 for A), but A has a higher benefit-cost ratio (a ratio of 10 for A as compared with 5 for B). This example shows why we should, in designing the most effective policies, look at benefits minus costs, not benefits divided by costs.¶ This leads to the second point, which is that the authors summarize my results incorrectly. My research shows that there are indeed substantial net benefits from acting now rather than waiting fifty years. A look at Table 5-1 in my study A Question of Balance (2008) shows that the cost of waiting fifty years to begin reducing CO2 emissions is $2.3 trillion in 2005 prices. If we bring that number to today’s economy and prices, the loss from waiting is $4.1 trillion. Wars have been started over smaller sums.10¶ My study is just one of many economic studies showing that economic efficiency would point to the need to reduce CO2 and other greenhouse gas emissions right now, and not to wait for a half-century. Waiting is not only economically costly, but will also make the transition much more costly when it eventually takes place. Current economic studies also suggest that the most efficient policy is to raise the cost of CO2 emissions substantially, either through cap-and-trade or carbon taxes, to provide appropriate incentives for businesses and households to move to low-carbon activities.¶ One might argue that there are many uncertainties here, and we should wait until the uncertainties are resolved. Yes, there are many uncertainties. That does not imply that action should be delayed. Indeed, my experience in studying this subject for many years is that we have discovered more puzzles and greater uncertainties as researchers dig deeper into the field. There are continuing major questions about the future of the great ice sheets of Greenland and West Antarctica; the thawing of vast deposits of frozen methane; changes in the circulation patterns of the North Atlantic; the potential for runaway warming; and the impacts of ocean carbonization and acidification. Moreover, our economic models have great difficulties incorporating these major geophysical changes and their impacts in a reliable manner. Policies implemented today serve as a hedge against unsuspected future dangers that suddenly emerge to threaten our economies or environment. So, if anything, the uncertainties would point to a more rather than less forceful policy—and one starting sooner rather than later—to slow climate change.¶ The group of sixteen scientists argues that we should avoid alarm about climate change. I am equally concerned by those who allege that we will incur economic catastrophes if we take steps to slow climate change. The claim that cap-and-trade legislation or carbon taxes would be ruinous or disastrous to our societies does not stand up to serious economic analysis. We need to approach the issues with a cool head and a warm heart. And with respect for sound logic and good science.

## AT: feedback theory

### The positive climate feedback theory is false.

Meyer- 12 (Warren Meyer, writer at Forbes, “Understanding the Global Warming Debate” Forbes; 2/9/12; http://www.forbes.com/sites/warrenmeyer/2012/02/09/understanding-the-global-warming-debate/4/)

But the science of this positive climate feedback theory is far from settled. Just as skeptics are probably wrong to question the basic greenhouse gas effect of CO2, catastrophic global warming advocates are wrong to over-estimate our understanding of these feedbacks. Not only may the feedback number not be high, but it might be negative, as implied by some recent research, which would actually reduce the warming we would see from a doubling of CO2 to less than one degree Celsius. After all, most long-term stable natural systems (and that would certainly describe climate) are dominated by negative rather than positive feedbacks. At some point, theorizing becomes stale unless the theories are supported by observations. And the most important single observation relative to catastrophic man-made global warming theory is that the world has indeed warmed over

the last century, by perhaps 0.7C, coincident with the period mankind has burned a lot of fossil fuels.

## AT: skeptics and models

### Skeptics are false- better climate models now.

Meyer- 12 (Warren Meyer, writer at Forbes, “Understanding the Global Warming Debate” Forbes; 2/9/12; http://www.forbes.com/sites/warrenmeyer/2012/02/09/understanding-the-global-warming-debate/4/)

Some skeptics have tried, relatively futilely I think, to deny that the world is warming at all. Certainly skeptics have a lot of evidence that this measured warming may be exaggerated — there are some serious flaws in our surface temperature measurement system today and almost certainly much worse flaws in the numbers from, say, 1900 to which we are comparing current readings. But radically new technologies, such as satellites, that are not susceptible to these same flaws and coverage gaps have still measured an upward drift in temperatures over the last 30 years.

### Skeptics believe most of the warming theory.

Meyer- 12 (Warren Meyer, writer at Forbes, “Understanding the Global Warming Debate” Forbes; 2/9/12; http://www.forbes.com/sites/warrenmeyer/2012/02/09/understanding-the-global-warming-debate/4/)

So let’s come back to our original question — what is it exactly that skeptics “deny.” As we have seen, most don’t deny the greenhouse gas theory, or that the Earth has warmed some amount over the last several year. They don’t even deny that some of that warming has likely been via man-made CO2. What they deny is the catastrophe — they argue that the theory of strong climate positive feedback is flawed, and is greatly exaggerating the amount of warming we will see from man-made CO2. And, they are simultaneously denying that most or all of past warming is man-made, and arguing instead that the amount that is natural and cyclic is being under-estimated.

### No bias against warming skeptics.

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

4.¶ The fourth contention by the sixteen scientists is that skeptical climate scientists are living under a reign of terror about their professional and personal livelihoods. They write:¶ Although the number of publicly dissenting scientists is growing, many young scientists furtively say that while they also have serious doubts about the global-warming message, they are afraid to speak up for fear of not being promoted—or worse….¶ This is not the way science is supposed to work, but we have seen it before—for example, in the frightening period when Trofim Lysenko hijacked biology in the Soviet Union. Soviet biologists who revealed that they believed in genes, which Lysenko maintained were a bourgeois fiction, were fired from their jobs. Many were sent to the gulag and some were condemned to death.¶ While we must always be attentive to a herd instinct, this lurid tale is misleading in the extreme. Some background on Lysenko will be useful. He was the leader of a group that rejected standard genetics and held that the acquired characteristics of an organism could be inherited by that organism’s descendants. He exploited the Soviet ideology about heredity, the need for agricultural production, and the favor of a powerful dictator—Stalin—to attract adherents to his theories. Under his influence, genetics was officially condemned as unscientific. Once he gained control of Russian biology, genetics research was prohibited, and thousands of geneticists were fired. Many leading geneticists were exiled to labor camps in Siberia, poisoned, or shot. His influence began to wane after Stalin’s death, but it took many years for Soviet biology to overcome the disastrous consequences of the Lysenko affair.8¶ The idea that skeptical climate scientists are being treated like Soviet geneticists in the Stalinist period has no basis in fact. There are no political or scientific dictators in the US. No climate scientist has been expelled from the US National Academy of Sciences. No skeptics have been arrested or banished to gulags or the modern equivalents of Siberia. Indeed, the dissenting authors are at the world’s greatest universities, including Princeton, MIT, Rockefeller, the University of Cambridge, and the University of Paris.¶ I can speak personally for the lively debate about climate change policy. There are controversies about many details of climate science and economics. While some claim that skeptics cannot get their papers published, working papers and the Internet are open to all. I believe the opposite of what the sixteen claim to be true: dissident voices and new theories are encouraged because they are critical to sharpening our analysis. The idea that climate science and economics are being suppressed by a modern Lysenkoism is pure fiction.¶ 5.

### Academics wont skew climate data.

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

A fifth argument is that mainstream climate scientists are benefiting from the clamor about climate change:¶ Why is there so much passion about global warming…? There are several reasons, but a good place to start is the old question “cui bono?” Or the modern update, “Follow the money.”¶ Alarmism over climate is of great benefit to many, providing government funding for academic research and a reason for government bureaucracies to grow. Alarmism also offers an excuse for governments to raise taxes, taxpayer-funded subsidies for businesses that understand how to work the political system, and a lure for big donations to charitable foundations promising to save the planet.¶ This argument is inaccurate as scientific history and unsupported by any evidence. There is a suggestion that standard theories about global warming have been put together by the scientific equivalent of Madison Avenue to raise funds from government agencies like the National Science Foundation (NSF). The fact is that the first precise calculations about the impact of increased CO2 concentrations on the earth’s surface temperature were made by Svante Arrhenius in 1896, more than five decades before the NSF was founded.¶ The skeptics’ account also misunderstands the incentives in academic research. IPCC authors are not paid. Scientists who serve on panels of the National Academy of Science do so without monetary compensation for their time and are subject to close scrutiny for conflicts of interest. Academic advancement occurs primarily from publication of original research and contributions to the advancement of knowledge, not from supporting “popular” views. Indeed, academics have often been subject to harsh political attacks when their views clashed with current political or religious teachings. This is the case in economics today, where Keynesian economists are attacked for their advocacy of “fiscal stimulus” to promote recovery from a deep recession; and in biology, where evolutionary biologists are attacked as atheists because they are steadfast in their findings that the earth is billions rather than thousands of years old.¶ In fact, the argument about the venality of the academy is largely a diversion. The big money in climate change involves firms, industries, and individuals who worry that their economic interests will be harmed by policies to slow climate change. The attacks on the science of global warming are reminiscent of the well-documented resistance by cigarette companies to scientific findings on the dangers of smoking. Beginning in 1953, the largest tobacco companies launched a public relations campaign to convince the public and the government that there was no sound scientific basis for the claim that cigarette smoking was dangerous. The most devious part of the campaign was the underwriting of researchers who would support the industry’s claim. The approach was aptly described by one tobacco company executive: “Doubt is our product since it is the best means of competing with the ‘body of fact’ that exists in the mind of the general public. It is also the means of establishing a controversy.”9¶ One of the worrisome features of the distortion of climate science is that the stakes are huge here—even larger than the economic stakes for keeping the cigarette industry alive. Tobacco sales in the United States today are under $100 billion. By contrast, expenditures on all energy goods and services are close to $1,000 billion. Restrictions on CO2 emissions large enough to bend downward the temperature curve from its current trajectory to a maximum of 2 or 3 degrees Centigrade would have large economic effects on many businesses. Scientists, citizens, and our leaders will need to be extremely vigilant to prevent pollution of the scientific process by the merchants of doubt.

### Large scope of warming cant be predicted by one model.

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

2.¶ A second argument is that warming is smaller than predicted by the models:¶ The lack of warming for more than a decade—indeed, the smaller-than-predicted warming over the 22 years since the UN’s Intergovernmental Panel on Climate Change (IPCC) began issuing projections—suggests that computer models have greatly exaggerated how much warming additional CO2 can cause.¶ What is the evidence on the performance of climate models? Do they predict the historical trend accurately? Statisticians routinely address this kind of question. The standard approach is to perform an experiment in which (case 1) modelers put the changes in CO2 concentrations and other climate influences in a climate model and estimate the resulting temperature path, and then (case 2) modelers calculate what would happen in the counterfactual situation where the only changes were due to natural sources, for example, the sun and volcanoes, with no human-induced changes. They then compare the actual temperature increases of the model predictions for all sources (case 1) with the predictions for natural sources alone (case 2).¶ This experiment has been performed many times using climate models. A good example is the analysis described in the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (for the actual figure, see the accompanying online material4). Several modelers ran both cases 1 and 2 described above—one including human-induced changes and one with only natural sources. This experiment showed that the projections of climate models are consistent with recorded temperature trends over recent decades only if human impacts are included. The divergent trend is especially pronounced after 1980. By 2005, calculations using natural sources alone underpredict the actual temperature increases by about 0.7 degrees Centigrade, while the calculations including human sources track the actual temperature trend very closely.¶ In reviewing the results, the IPCC report concluded: “No climate model using natural forcings [i.e., natural warming factors] alone has reproduced the observed global warming trend in the second half of the twentieth century.”5¶

## AT: Tech solves

### Tech wont solve warming.

Thompson- 07 (Andrea Thompson,Senior Writer for our sister sites LiveScience and SPACE.com prior to the launch of OurAmazingPlanet. She graduated from Georgia Tech with a B.S. in Earth and Atmospheric Sciences in 2004 and a Master's in the same subject in 2006. She attended the Science, Health and Environmental Reporting Program at New York University and graduated with a Master of Arts in 2006. “Technology Won't Stop Global Warming, Economists Say”; LiveScience.com; 11/19/07; http://www.livescience.com/4722-technology-won-stop-global-warming-economists.html)

¶ Greenhouse gas emissions in the United States may grow faster in the next 50 years than they have in the past 50, and higher energy prices will curb the problem better than technology, two economists say.¶ ¶ Despite many technological advances in the past half-century, the rates of growth of energy use and of greenhouse gas emissions have continued to rise (by about 2.2 and 1.6 percent per year respectively), despite the rising costs of energy, Richard Eckaus of MIT and Ian Sue Wing of Boston University found in a new study.¶ ¶ "We found that, in spite of increasing energy prices, technological change has not been responsible for much reduction in energy use, and that it may have had the reverse effect," Eckaus said.¶ ¶ Another recent study showed that carbon dioxide levels in the atmosphere were rising faster than expected because inefficient technologies were on the rise in developed countries such as China and because the natural mechanisms for sucking up and storing carbon, called carbon sinks, were essentially being exhausted.¶ ¶ In the new study, funded by the U.S. Department of Energy and the Harvard Kennedy School of Government in Massachusetts, Eckaus and Sue Wing examined the periods of 1958 to 1996 and 1980 to 1996 and then used computer models to project changes in the growth rates of both energy use and emissions from 2000 to 2050. Their findings, detailed in the November issue of the journal Energy Policy, showed that these rates may accelerate.¶ ¶ "The rates of growth could be higher by a half percent or more, which becomes significant when compounded over 50 years," Eckaus said.¶ ¶ The Intergovernmental Panel on Climate Change released a report this weekend that warned of the hazards that rising carbon dioxide levels will cause, noting that even if reductions are made, certain effects, such as sea level rise, will still occur.¶ ¶ Technological advances may not be a fix even though they have been looked to as a source of curbing emissions of carbon dioxide and other greenhouse gases, Eckaus said, citing the U.S. steelmaking industry as an example.¶ ¶ Though steelmakers' furnaces are now electrical, reducing coal use at the steel plant, some of the electricity that powers the furnaces is still generated by coal, resulting in more carbon dioxide emissions.¶ ¶ Instead of relying on technology to solve the global warming problem, governments should make energy more expensive, Eckaus advises.¶ ¶ "There is no 'a priori' reason to think technology has the potential for reducing energy use while meeting the tests of economics," he said. "It's politically unappetizing in the U.S., but in Europe, gas costs $6 a gallon. Make energy more expensive: People will use less of it."

### Geoengineering to solve warming will not be implemented.

Specter-12 (Michael Specter, writer at the New Yorker, “Is There a Technological Solution to Global Warming?”; The New Yorker; 5/14/12; http://www.newyorker.com/reporting/2012/05/14/120514fa\_fact\_specter?currentPage=all)

After leaving Eisenberger’s demonstration project, I spoke with Curtis Carlson, who, for more than a decade, has been the chairman and chief executive officer of S.R.I. and a leading voice on the future of American innovation. “These geoengineering methods will not be implemented for decades—or ever,” he said. Nonetheless, scientists worry that if methane emissions from the Arctic increase as rapidly as some of the data now suggest, climate intervention isn’t going to be an option. It’s going to be a requirement. “When and where do we have the serious discussion about how to intervene?” Carlson asked. “There are no agreed-upon rules or criteria. There isn’t even a body that could create the rules.”¶ Over the past three years, a series of increasingly urgent reports—from the Royal Society, in the U.K., the Washington-based Bipartisan Policy Center, and the Government Accountability Office, among other places—have practically begged decision-makers to begin planning for a world in which geoengineering might be their only recourse. As one recent study from the Wilson International Center for Scholars concluded, “At the very least, we need to learn what approaches to avoid even if desperate.”¶ The most environmentally sound approach to geoengineering is the least palatable politically. “If it becomes necessary to ring the planet with sulfates, why would you do that all at once?’’ Ken Caldeira asked. “If the total amount of climate change that occurs could be neutralized by one Mt. Pinatubo, then doesn’t it make sense to add one per cent this year, two per cent next year, and three per cent the year after that?’’ he said. “Ramp it up slowly, throughout the century, and that way we can monitor what is happening. If we see something at one per cent that seems dangerous, we can easily dial it back. But who is going to do that when we don’t have a visible crisis? Which politician in which country?’’

## AT: Reducing Emissions

### Elimination gas emissions impossible.

Specter-12 (Michael Specter, writer at the New Yorker, “Is There a Technological Solution to Global Warming?”; The New Yorker; 5/14/12; http://www.newyorker.com/reporting/2012/05/14/120514fa\_fact\_specter?currentPage=all)

The planet is getting richer as well as more crowded, and the pressure to produce more energy will become acute long before the end of the century. Predilections of the rich world—constant travel, industrial activity, increasing reliance on meat for protein—require enormous physical resources. Yet many people still hope to solve the problem of climate change just by eliminating greenhouse-gas emissions. “When people talk about bringing emissions to zero, they are talking about something that will never happen,’’ Ken Caldeira told me. “Because that would require a complete alteration in the way humans are built.”

## AT: Cooperation Solves

### International cooperation on climate impossible.

Specter-12 (Michael Specter, writer at the New Yorker, “Is There a Technological Solution to Global Warming?”; The New Yorker; 5/14/12; http://www.newyorker.com/reporting/2012/05/14/120514fa\_fact\_specter?currentPage=all)

Unfortunately, the least risky approach politically is also the most dangerous: do nothing until the world is faced with a cataclysm and then slip into a frenzied crisis mode. The political implications of any such action would be impossible to overstate. What would happen, for example, if one country decided to embark on such a program without the agreement of other countries? Or if industrialized nations agreed to inject sulfur particles into the stratosphere and accidentally set off a climate emergency that caused drought in China, India, or Africa?¶ “Let’s say the Chinese government decides their monsoon strength, upon which hundreds of millions of people rely for sustenance, is weakening,” Caldeira said. “They have reason to believe that making clouds right near the ocean might help, and they started to do that, and the Indians found out and believed—justifiably or not—that it would make their monsoon worse. What happens then? Where do we go to discuss that? We have no mechanism to settle that dispute.”

### Other industrial countries won’t lower emissions- means the squo doesn’t solve warming.

McArdle-12 (Megan McArdle is a senior editor for The Atlantic who writes about business and economics. She has worked at three start-ups, a consulting firm, an investment bank, a disaster recovery firm at Ground Zero, and The Economist.” Why We Should Act to Stop Global Warming—and Why We Won't” The Atlantic; 2/28/12; <http://www.theatlantic.com/business/archive/2012/02/why-we-should-act-to-stop-global-warming-and-why-we-wont/253752/>)

Even if he'd found something much more damaging than he managed to fish out of their confidential files, it wouldn't have meaningfully altered the global warming policy debate. That debate really isn't much about whether this is happening, because most people don't have the scientific background, the intellectual ability, or the interest to determine whether this is happening. (I am speaking now of both sides: the average person who drips contempt for those mouth-breathing climate deniers has exactly as much personal knowledge about climate change as some talk radio host arguing that global warming is a crock because hey, it snowed last week!) ¶ No, the debate is about how unpleasant it would be to prevent it--which really isn't much of a debate, either, because the obvious answer is "very, except maybe for DINK urbanites". And that's where the discussion pretty much stalls out.¶ Addressing global warming is the mother of all collective action problems. The reductions needed to avoid catastrophe are very sizeable, and they must occur across the globe. Yet fossil fuel resources are fungible. Oil that is not burned in the United States does not stay tidily in the ground; it gets shipped somewhere else, like China. This is especially true these days, when there's basically no spare capacity; close to every available barrel is being pumped. ¶ In this environment, lowering our oil consumption lowers the price, but not supply. This is a nice charitable gift to emerging nations, but the climate does not care whether the carbon comes from fat, disgusting Americans thundering around in their mongo SUVs, or soulful Indian peasants getting their first tractor. It will warm up, or not, just the same.¶ And I've seen no evidence that the Chinese, or the Indians, plan to do much of anything to reduce their emissions in the near-term. They talk a bunch about green initiatives, which makes westerners all excited, but from what I can tell, their green initiatives with teeth are aimed at reducing their deadly, ubiquitous air pollution, not their carbon emissions. Oh, they may reduce the carbon intensity of their Gross Domestic Product as their economy upskills. But the United States is actually relatively carbon-efficient per dollar of GDP compared to China or India. It's just that we have a lot more dollars worth of GDP. ¶ For China to grow while merely holding its emissions steady--and their carbon output already surpasses ours and Canada's combined--then the improvement in carbon intensity will have to match their rate of growth. So far, this hasn't happened, and given that China has vast coal deposits that it's using to bring electricity to its citizens, it doesn't seem likely to in the near future. Yes, they've made a big investment in solar panel production . . . for export to rich countries that subsidize them.

## AT: Sunspots

### No correlation between sunspots and warming- based on flawed studies.

Connor-09 (STEVE CONNOR , science editor at the UK independent, “ Sunspots do not cause climate change, say scientists¶ Key claim of global warming sceptics debunked”; 12/14/09; The Independent; http://www.independent.co.uk/environment/climate-change/sunspots-do-not-cause-climate-change-say-scientists-1839867.html)

Leading scientists, including a Nobel Prize-winner, have rounded on studies used by climate sceptics to show that global warming is a natural phenomenon connected with sunspots, rather than the result of the man-made emissions of carbon dioxide.¶ The researchers – all experts in climate or solar science – have told The Independent that the scientific evidence continually cited by sceptics to promote the idea of sunspots being the cause of global warming is deeply flawed.¶ Studies published in 1991 and 1998 claimed to establish a link between global temperatures and solar activity – sunspots – and continue to be cited by climate sceptics, including those who attended an "alternative" climate conference in Copenhagen last week.¶ However, problems with the data used to establish the correlation have been identified by other experts and the flaws are now widely accepted by the scientific community, even though the studies continue to be used to support the idea that global warming is "natural".¶ The issue has gained new importance in the light of opinion polls showing that nearly one in two people now believe global warming is a natural phenomenon unconnected with CO2 emissions. Public distrust of the accepted explanation of global warming has been exacerbated by emails leaked from the Climatic Research Unit at the University of East Anglia, which appeared to suggest that scientists were engaged in a conspiracy to suppress contrarian views.¶ Many sceptics who accept that global temperatures have risen in recent decades suggest it is part of the climate's natural variability and could be accounted for by normal variations in the activity of the Sun. Powerful support for this idea came in 1991 when Eigil Friis-Christensen, director of the Danish National Space Centre, published a study showing a remarkable correlation between global warming and the length of sunspot cycles.¶ A further study published in 1998 by Mr Friis-Christensen and his colleague Henrik Svensmark suggested a possible explanation for the warming trend with a link between solar activity, cosmic rays and the formation of clouds.¶ However, many scientists now believe both of these studies are seriously flawed, and that when errors introduced into the analysis are removed, the correlations disappear, with no link between sunspots and global warming. Peter Laut, a former adviser to the Danish Energy Agency who first identified the flaws, said there were practically no observations to support the idea that variations in sunspots played more than a minor role in global warming.¶ Mr Laut's analysis of the flaws is accepted by most scientists familiar with the research, including Paul Crutzen, an atmospheric chemist at the Max Planck Institute in Germany, who won a Nobel Prize for his work on understanding the hole in the ozone layer. "There is definitely a problem [with these studies]. Laut has really pinned it down but the [sunspot] argument keeps reappearing and its quite irritating," Professor Crutzen said.¶ Professor Stefan Rahsmstorf, of Potsdam University, agreed: "I've looked into this quite closely and I'm on Laut's side in terms of his analysis of the data."¶ Some scientists believe the flaws are so serious that the papers should be retracted or at least the authors should acknowledge that their work contains problems that question the correlations they have apparently established.¶ "Their controversial papers must be retracted or at least that there will be an official statement by them acknowledging their mistake," said Andre Berger, honorary president of the European Geosciences Union.¶

## CO2 K2 Warming

### CO2 leads to warming.

Borenstein-12 (SETH BORENSTEIN, AP Science Writer, ““New study bolsters CO2-warming link” The Durango Herald;4/11/12; http://durangoherald.com/article/20120412/NEWS06/704129979/-1/s)

WASHINGTON – The dramatic temperature increases that thawed the last ice age followed spikes in carbon-dioxide levels in the air, a new study finds. Researchers say that further strengthens the scientific case explaining current human-made global warming.¶ In the new study, scientists show the atmospheric concentration of that heat-trapping greenhouse gas jumped more than 40 percent. Then global temperatures went up about 6 degrees.¶ What is remarkable is that when the two are plotted they rise, plateau and rise again in a strikingly similar way with a slight lag. The warming over 6,000 years follows the greenhouse-gas increase, just as scientific theory has long held.¶ This is important because, until this study, the two curves weren’t quite so in sync. At some points, it seemed that the temperatures warmed before the carbon-dioxide levels increased, something that climate skeptics seized upon.¶ How could carbon dioxide cause warming if the temperatures warmed first, argue skeptics, who are in the scientific minority.¶ Earlier studies had looked at carbon-dioxide levels and temperature readings from Antarctica, not the entire world. A study published last week in the journal Nature estimated global temperatures using 80 different proxies – ice and mud samples from dozens of places around the world – and found that globally, temperatures clearly went up only after carbon dioxide jumped.¶ “You end up with something that looks remarkably similar to the pattern of rising carbon dioxide through time,” study lead author Jeremy Shankun of Harvard University said. “This, to me, seems like pretty powerful proof of theory of the connection between greenhouse gases and global warming.”¶ There are two main sources of carbon dioxide, the chief greenhouse gas. The natural source comes mostly from dead plants and animals and that amplified the ice age thaw. In modern day, emissions from burning coal, oil and other fossil fuels add greatly to that natural carbon dioxide.¶ The ice age warming in Antarctica still appears to come before the carbon dioxide increases, which are calculated using an 800,000-year-old Antarctic ice core, but there’s good reason, Shankun said.¶ Temperature records and other ocean data paint a complicated picture of just how the last ice age thawed. It’s almost like a Rube Goldberg machine, with one step leading to another and another. When the last ice age peaked about 25,000 years ago, the ice sheet extended to Iowa and New York City, Shankun said.¶ The ice sheet was actually so large that it was unstable, said study co-author Peter Clark of Oregon State University.¶ The initial trigger to the melt: A small and predictable wobble in Earth’s orbit around the sun. That tiny wobble meant a tilt toward the sun that brought more sunlight in the Northern Hemisphere, causing ice sheets to melt and sending whopping levels of fresh water into the world’s oceans.¶ That caused the global circulation of the oceans to stop, which in turn warmed the southern oceans, melting southern ice sheets over areas where more of the world’s carbon dioxide is trapped, Shankun said.¶ That released massive amounts of the greenhouse gas, which then amplified the global temperature spike, Shankun said.¶ By 11,000 years ago, the ice age was history and greenhouse gas and temperature levels had stabilized. That changed with the industrial age and the increased use of fossil fuels.¶ Carbon dioxide levels have jumped roughly the same amount in the last century as they did over 6,000 years to get out of the ice age, Shankun said.¶ Penn State University professor Richard Alley and others called this a significant advance in studies about past climate change and carbon dioxide, saying “this may be of help in explaining things out in the sound-bite world.”¶

### CO2 leads to warming

Nordhaus-12 (William D. Nordhaus, is Sterling Professor of Economics at Yale, “Why the Global Warming Skeptics Are Wrong”; The New York Review of Books; 3/22/12; http://www.nybooks.com/articles/archives/2012/mar/22/why-global-warming-skeptics-are-wrong/?pagination=false)

3.¶ The sixteen scientists next attack the idea of CO2 as a pollutant. They write: “The fact is that CO2 is not a pollutant.” By this they presumably mean that CO2 is not by itself toxic to humans or other organisms within the range of concentrations that we are likely to encounter, and indeed higher CO2 concentrations may be beneficial.¶ However, this is not the meaning of pollution under US law or in standard economics. The US Clean Air Act defined an air pollutant as “any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive…substance or matter which is emitted into or otherwise enters the ambient air.” In a 2007 decision on this question, the Supreme Court ruled clearly on the question: “Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt ‘physical [and] chemical…substance[s] which [are] emitted into…the ambient air.’ …Greenhouse gases fit well within the Clean Air Act’s capacious definition of ‘air pollutant.’”6¶ In economics, a pollutant is a form of negative externality—that is, a byproduct of economic activity that causes damages to innocent bystanders. The question here is whether emissions of CO2 and other greenhouse gases will cause net damages, now and in the future. This question has been studied extensively. The most recent thorough survey by the leading scholar in this field, Richard Tol, finds a wide range of damages, particularly if warming is greater than 2 degrees Centigrade.7 Major areas of concern are sea-level rise, more intense hurricanes, losses of species and ecosystems, acidification of the oceans, as well as threats to the natural and cultural heritage of the planet.¶ In short, the contention that CO2 is not a pollutant is a rhetorical device and is not supported by US law or by economic theory or studies.¶

# Impacts

## Agriculture

### Global warming hurts crop yields.

Tana and Shibasak- 03 (Guoxin Tana, Institute of Industrial Science, University of Tokyo, Ryosuke Shibasak, “Global estimation of crop productivity and the impacts of global warming by GIS and EPIC integration”Landscape Theory and Landscape Modelling; 10/15/03; <http://www.sciencedirect.com/science/article/pii/S0304380003001467>)

The impact of projected global warming on crop yields has been¶ evaluated by indirect methods using simulation models. Direct¶ studies on the effects of observed climate change on crop growth¶ and yield could provide more accurate information for assessing¶ the impact of climate change on crop production. We analyzed¶ weather data at the International Rice Research Institute Farm from¶ 1979 to 2003 to examine temperature trends and the relationship¶ between rice yield and temperature by using data from irrigated¶ ﬁeld experiments conducted at the International Rice Research¶ Institute Farm from 1992 to 2003. Here we report that annual mean¶ maximum and minimum temperatures have increased by 0.35°C¶ and 1.13°C, respectively, for the period 1979–2003 and a close¶ linkage between rice grain yield and mean minimum temperature¶ during the dry cropping season (January to April). Grain yield¶ declined by 10% for each 1°C increase in growing-season minimum¶ temperature in the dry season, whereas the effect of maximum¶ temperature on crop yield was insigniﬁcant. This report provides a¶ direct evidence of decreased rice yields from increased nighttime¶ temperature associated with global warming.

### Warming hurts agriculture.

Tana and Shibasak- 03 (Guoxin Tana, Institute of Industrial Science, University of Tokyo, Ryosuke Shibasak, “Global estimation of crop productivity and the impacts of global warming by GIS and EPIC integration”Landscape Theory and Landscape Modelling; 10/15/03; <http://www.sciencedirect.com/science/article/pii/S0304380003001467>)

A large number of research groups have focused on estimation of all damages of globalwarming ( [Adams et al., 1993], [Easterling et al., 1992] and [Dixon et al., 1994]). From their exhaustive literature analysis, globally about one-fifth of all damages will occur in agriculture (Pearce et al., 1996). Together with damages from sea level rise, increasing mortality and increasing energy demand, food production is ranking at the top of the vulnerable sectors. However, all these researches are often very rough, because highly aggregated studies suffer from the fact that sub-national or sub-regional differences are not sufficiently taken into account. For example, international productivity differences, socioeconomic environments, or the climate microstructures within a country are neglected. Consequently, as the Intergovernment Panel on Climate Change (IPCC1) states in its report, future work regarding the impacts of climate change on agriculture should be focused on regional models, which carefully paying attention to local features (Reilly, 1996). That means that a useful model to estimate different crop productivities at global level is the key to predict the impact of climate on farming.

### Warming hurts crop growth and raises food prices.

Vastag and Eilperin-11 (Brian Vastag is a science reporter at The Washington Post,. From 2004 to 2010, Vastag freelanced for some 40 publications, including U.S. News & World Report, New Scientist, Health, Nature, Science, Scientific American, Science News and National Geographic News. From 2000 to 2004, Vastag served as Washington news editor for the Journal of the American Medical Association. Vastag has made live radio appearances on BBC World Service, WNYC, and Public Radio International’s The World, and television appearances on MSNBC and CNN Headline News. Juliet Eilperin joined The Washington Post as the House of Representatives reporter, “Report: Global warming already crimping crop production, pushing prices higher” Washington Post; 5/5/11; http://www.washingtonpost.com/national/report-global-warming-already-crimping-crop-production-pushing-prices-higher/2011/05/04/AFdsMSzF\_story.html)

The warming of the Earth has cooled the yields of corn and wheat in much of the world, a new study finds.¶ Although agricultural advances have pushed global production of staple crops skyward, hotter temperatures in Russia, China, Mexico and elsewhere have stunted that growth and contributed to the long-term rise in food prices, says the analysis published Thursday in the journal Science.¶ “This is tens of billions of dollars a year in lost [agricultural] productivity because of warming,” said David Lobell, an Earth scientist at Stanford University and an author on the report.¶ Three decades of global warming crimped worldwide yields of corn by about 5.5 percent and wheat by about 3.8 percent compared with what would have been produced had world temperatures remained stable, the report says.¶ A burgeoning global population also needs more crops — and more grain-fed beef — which contributes to rising food prices much more than climate change, Lobell said. This week, the United Nations also projected that the global population will hit 7 billion in October and 10.6 billion by 2050. Such a huge increase will continue to push food prices higher.¶ For now, the bread basket of America bucked the trend, as agricultural regions of the United States have not warmed much during their growing seasons since 1980. Climate scientists debate the reasons, with some pointing to particulate pollution over the middle of the United States as a possible cooling counterbalance.¶ This climate hit adds about 6 percent to the cost of wheat and corn, staples whose prices have skyrocketed in recent years. Although global warming is “a small part of the overall story of why prices are going up,” Lobell said, “it’s not negligible.”¶ Global corn prices doubled between April 2010 and April 2011, the United Nation’s Food and Agriculture Organization reported Thursday. Wheat prices are up 60 to 80 percent depending on the strain, said Abdolreza Abbassian, an FAO analyst.

### Warming hurts food prices

Vastag and Eilperin-11 (Brian Vastag is a science reporter at The Washington Post,. From 2004 to 2010, Vastag freelanced for some 40 publications, including U.S. News & World Report, New Scientist, Health, Nature, Science, Scientific American, Science News and National Geographic News. From 2000 to 2004, Vastag served as Washington news editor for the Journal of the American Medical Association. Vastag has made live radio appearances on BBC World Service, WNYC, and Public Radio International’s The World, and television appearances on MSNBC and CNN Headline News. Juliet Eilperin joined The Washington Post as the House of Representatives reporter, “Report: Global warming already crimping crop production, pushing prices higher” Washington Post; 5/5/11; http://www.washingtonpost.com/national/report-global-warming-already-crimping-crop-production-pushing-prices-higher/2011/05/04/AFdsMSzF\_story.html)

Hot weather stunts the growth of wheat and corn as the plants dry out. Above 95 degrees, corn typically fails to flower and reproduce.¶ Wheat production in Russia took the biggest hit — with yields about 15 percent lower than they might have been — as that country’s arable region has warmed substantially since 1980.¶ Ken Cassman, a professor of systems agronomy at the University of Nebraska at Lincoln, challenged the study. “It’s not clear how well these analyses are capturing how well farmers can respond, and have been responding, to changing temperatures,” he said.¶ Lobell said the study did not try to assess any adaptations adopted by farmers by, for example, adjusting planting schedules or moving to cooler locales. But it’s a question he and his colleagues are pursuing.¶ The study should motivate governments and seed companies to develop heat- and drought-resistant crops, Schlenker said. “In the last 60 years, there have been close to no advances in making crops less sensitive to extreme heat,” he said.¶ Likewise, farmers around the world will need to adapt to a rapidly changing climate, said Earth Policy Institute President Lester Brown.¶ And although U.S. agriculture might not be feeling the worst effects of climate change, Brown said, changing precipitation patterns are affecting the nation’s planting schedule. Typically, 40 percent of the nation’s corn crop is planted by May 1; this year only 13 percent is in the ground because of heavy rains in the Midwest and northern plain states.¶ “We are way behind, and we’re not going to catch up quickly,” Brown said, adding that if farmers can’t plant much of the corn crop by May 10, it could have a significant impact on the year’s overall yield.¶ The nation’s consumers might end up paying more for food as other countries experience shortages.¶ “There’s no question . . . the price effects are going to be felt much more broadly,” said David Waskow, climate change program director for Oxfam America.

Warming hurts agriculture.

Cline- 08 (William R. Cline, a joint senior fellow at Center for Global Development and the Peterson Institute for International Economics, ,”Global Warming and Agriculture”; Finance and Development; March 2008; http://www.imf.org/external/pubs/ft/fandd/2008/03/pdf/cline.pdf)

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 will lower global agriculture production by 16 percent.

Cline- 08 (William R. Cline, a joint senior fellow at Center for Global Development and the Peterson Institute for International Economics, ,”Global Warming and Agriculture”; Finance and Development; March 2008; http://www.imf.org/external/pubs/ft/fandd/2008/03/pdf/cline.pdf)

The results give little support to the optimists. Globally, the ¶ overall impact of baseline global warming by the 2080s is a ¶ reduction in agricultural productivity (output per hectare) ¶ of 16 percent without carbon fertilization, and a reduction of 3 percent should carbon fertilization benefits actually materialize—when results are weighted by output (see ¶ table 1, bottom panel). the losses are greater when weighted ¶ by population or country.¶ the sharp concentration of losses is in the developing ¶ countries. Whereas the industrial countries experience outcomes ranging from 6 percent losses without carbon fertilization to 8 percent gains with it, developing country regions ¶ suffer losses of about 25 percent without carbon fertilization and 10–15 percent if carbon fertilization is included. For ¶ developing countries, the median loss would be 15–26 percent, and the output-weighted average loss, 9–21 percent. ¶ Losses could reach devastating levels in some of the poorest ¶ countries (greater than 50 percent in Senegal and Sudan).

### Global warming hurts crop production.

Nettleman and Khasnis 05 (Atul A. Khasnis, Mary D. Nettleman, Department of Medicine, Michigan State University, East Lansing, Michigan; “Global Warming and Infectious Disease”; Archieves of Medical Research; 4/1/09; http://www.sciencedirect.com/science/article/pii/S0188440905001517)

Food¶ Currently, 800 million people are malnourished (19). As the world's population increases, food consumption is expected to double over the next few decades. Increased demands for food have indirectly exacerbated global warming risks. Problems associated with intensifying production on land already in use are becoming increasingly evident (20). Expanding the amount of cultivable land is an option for increasing total crop production but could lead to increased competition for land, strain on natural resources, increased greenhouse gases, and reduced natural sinks of carbon as a result of ensuing deforestation.¶ The main direct effects of global warming will be through changes in temperature, precipitation, length of growing season, and timing of extreme or critical events relative to crop development, as well as through changes in atmospheric CO2 concentration (which may have a beneficial effect on the growth of many crop types) [21] and [22]. Middle to high latitudes may experience increased productivity, whereas the tropics and subtropics are likely to face decline in yields. The livelihoods of farmers and pastoral peoples, who make up a large portion of rural populations in some regions, could be negatively affected. Regionally decreased rainfall is likely to compromise agricultural production significantly. Adaptation options include changes in crops and crop varieties, biotechnically or genetically developed new crop varieties, changes in planting and reaping schedules, and improved water and irrigation systems availability and development. Other factors influencing the vulnerability of agricultural production are per capita income, the fraction of economy that is dependent on agriculture and preexisting land conditions.¶ Malnutrition is an important vulnerability factor for infectious disease. As stated above, globalwarming is predicted to reduce arable land (due to increasing sea levels) as well as making presently available land more hostile to crop cultivation. In the face of a growing population, this would amount to lesser availability of food and under-nutrition. Climate change could also affect food production, with concentrated decline in low-latitude regions where food insecurity often already exists, including Africa, the Middle East and India [23] and [24]. Estimates of hunger risk based on assumptions about future population growth, international trade and agricultural technology have not yet factored in extreme weather events (24) or increases in agricultural pests and pathogens (25).

## Disease

Global warming worsens disease.

J. Clement et al.1-11 (J, Clement ¶ National Hantavirus Reference Centre, Clinical Virology, University Hospital ¶ Gasthuisberg & Rega Medical Research Institute, University of Leuven, Leuven, “Global Warming and Epidemic Trends of an ¶ Emerging Viral Disease in Western-Europe: ¶ The Nephropathia Epidemica Case “National Hantavirus Research Centre; 9/29/11; http://cdn.intechweb.org/pdfs/21321.pdf)

Global warming is the most evident explanation for the epidemic trend of NE, an emerging ¶ rodent-borne hantaviral disease, targeting mainly the kidney in humans. The correlation ¶ between higher temperatures, mainly during summers and autumns of the last decade, and ¶ higher NE peaks was proven to be highly significant in Belgium. Since occurrence and ¶ evolution of NE peaks in three adjacent countries, France, Germany and The Netherlands, ¶ was very similar to the situation in Belgium, it can be assumed that similar temperature driven ecological mechanisms were likewise operative in these countries. Consequently, NE ¶ is now established as the most frequent infectious cause of acute (but self-remitting) kidney ¶ injury (AKI) in W.-Europe, as it was already the case in the two other NE-endemic regions ¶ in Europe, W.-Russia and Fenno-Scandia. ¶ In recent medical literature, global warming has been invoked mainly as a driving force ¶ behind some (sub)tropical arthropod-borne infections, such as malaria, dengue, and CongoCrimean haemorrhagic fever (CCHF), via an expansion of the habitat of the responsible ¶ vectors, mostly mosquitoes or ticks. This is the first report on the influence of global ¶ warming on an “autochthonous” disease, via expansion of the local rodent population. To ¶ our knowledge, this study is also the first assessment of a “new” kidney disease by a ¶ mathematical formula, or indirectly even by satellite monitoring.

### Global warming leads to disease.

Rohr et al- 11 (Jason R. Rohr1, , Andrew P. Dobson2, Pieter T.J. Johnson3, A. Marm Kilpatrick4, Sara H. Paull3, Thomas R. Raffel1, Diego Ruiz-Moreno5, Matthew B. Thomas6¶ 1 University of South Florida, Department of Integrative Biology, ¶ 2 Princeton University, Department of Ecology and Evolutionary Biology, ¶ 3 University of Colorado, Department of Ecology and Evolutionary Biology¶ 4 University of California at Santa Cruz, Department of Ecology and Evolutionary Biology, ¶ 5 Cornell University, Department of Ecology & Evolutionary Biology, ¶ 6 The Pennsylvania State University, Institutes of the Environment, Department of Entomology, Center for Infectious Disease Dynamics, “Frontiers in climate change–disease research”; Science Direct; June 2011; http://www.sciencedirect.com/science/article/pii/S0169534711000711)

Global climate change and the unprecedented rate of infectious disease emergence represent two of the most formidable ecological problems of our time [1], [2], [3], [4] and [5]. Several high-profile papers assert that climate change will increase the global distribution and prevalence of infectious diseases to the detriment of human health, biodiversity and ecosystem services (see Glossary), which has placed climate change–disease interactions at the center of scientific, political and public agendas [6], [7] and [8]. Indeed, there is compelling evidence that climate affects many diseases, including malaria, cholera, dengue and plague in humans [9], [10], [11] and [12], bluetongue in livestock [13] and diseases of amphibians, turtles and corals [6], [14], [15] and [16]

### Global warming fosters infectious disease.

Nettleman and Khasnis 05 (Atul A. Khasnis, Mary D. Nettleman, Department of Medicine, Michigan State University, East Lansing, Michigan; “Global Warming and Infectious Disease”; Archieves of Medical Research; 4/1/09; http://www.sciencedirect.com/science/article/pii/S0188440905001517)

Global warming has serious implications for all aspects of human life, including infectious diseases. The effect of global warming depends on the complex interaction between the human host population and the causative infectious agent. From the human standpoint, changes in the environment may trigger human migration, causing disease patterns to shift. Crop failures and famine may reduce host resistance to infections. Disease transmission may be enhanced through the scarcity and contamination of potable water sources. Importantly, significant economic and political stresses may damage the existing public health infrastructure, leaving mankind poorly prepared for unexpected epidemics. Global warming will certainly affect the abundance and distribution of disease vectors. Altitudes that are currently too cool to sustain vectors will become more conducive to them. Some vector populations may expand into new geographic areas, whereas others may disappear. Malaria, dengue, plague, and viruses causing encephalitic syndromes are among the many vector-borne diseases likely to be affected. Some models suggest that vector-borne diseases will become more common as the earth warms, although caution is needed in interpreting these predictions. Clearly, global warming will cause changes in the epidemiology of infectious diseases. The ability of mankind to react or adapt is dependent upon the magnitude and speed of the change. The outcome will also depend on our ability to recognize epidemics early, to contain them effectively, to provide appropriate treatment, and to commit resources to prevention and research.

### Warming causes outbreaks of malaria.

Nettleman and Khasnis 05 (Atul A. Khasnis, Mary D. Nettleman, Department of Medicine, Michigan State University, East Lansing, Michigan; “Global Warming and Infectious Disease”; Archieves of Medical Research; 4/1/09; http://www.sciencedirect.com/science/article/pii/S0188440905001517)

Many global warming scenarios include an increase in the frequency and intensity of the El Niño phenomenon (44). The El Niño Southern Oscillation is heralded by warm water flowing off the coast of Peru and Ecuador. It is caused in part by pressure differences in the air over the Pacific Ocean. Although beginning in the Pacific, the climatic effects of El Niño are global. Storms, heavy rain, regional drought, and warm temperatures are more frequent during El Niño (45). El Niño seasons have been associated with outbreaks of malaria in many areas [46] and [47]. However, the association is not constant and outbreaks have been regionally limited. It is important to point out that El Niño is a short-term climate change and that global warming implies a prolonged change. Thus, it is hazardous to extrapolate the effects of El Niño to predict the overall results of global climate change (48). However, El Niño events are predicted to become more common and more severe with global warming, and it appears likely that this will facilitate local epidemics of malaria.¶ From the standpoint of malaria, the effect of global warming will be felt most in areas that are currently on the edges of the range of infected mosquitoes (49). For example, malaria has been shown to march up mountains in response to wetter, warmer weather [50] and [51]. Altitudes that were once safe from mosquitoes will be at risk for epidemics. Tanser and colleagues (33) developed a model to predict the effect of global warming on exposure to the mosquito vector for malaria in Africa. The model was based on the historical associate of rainfall and temperature readings from 1920 to 1980 in Africa. Population estimates were overlaid on top of regional temperatures and were assumed to remain constant. The model was validated using existing mosquito surveys. Three potential global warming scenarios were considered, based on estimates from the Intergovernmental Panel for Climate Change. In the scenarios, atmospheric carbon dioxide increased by 47, 98, and 126% by the year 2100. Using these estimates, the number of person-months of exposure to the mosquito vector increased by 16, 23, and 28% for each scenario, respectively. The increase was predominately attributable to vector exposure at higher altitudes than currently. Ethiopia, Zimbabwe and South Africa experienced the largest projected changes. There was little latitudinal spread into new territories.¶ Increasing precipitation is not always favorable for mosquitoes. Torrential rains may wash away breeding sites and drought may eliminate the small pools of water favored by the mosquitoes for their eggs. On the other hand, drought in very wet areas may slow rapid streams and create pools of stagnant water (45).¶ Global warming may also bring famine and drought, leaving populations more susceptible to disease. Early models to predict malaria rates in the 1920s were based on rainfall and prices of wheat (50). When food was scarce, the price of wheat increased, making price a surrogate for crop failure and malnutrition

## Poverty

### Greenhouse emissions lead to poverty.

Taylor and Doren- 06(Jerry Taylor and Peter Van Doren, “Global Warming Insurance is a Bad Buy”; CATO Institute; 11/20/06; <http://www.cato.org/publications/commentary/global-warming-insurance-is-bad-buy>)

The direct costs associated with greenhouse gas emission controls include avoidable deaths in the developing world. The United Nations, for example, reports that about 2 million people on this planet die every year because they don't have electricity and must burn biomass for heating and cooking. This results in greatly elevated levels of indoor air pollutants and premature deaths. Increasing the cost of electricity – an unavoidable consequence of ridding the global economy of the fossil fuels that generate greenhouse gases – will slow our ability to conquer this problem.¶ Higher fossil fuel costs will also slow the general march out of poverty. Not only is poverty the number one killer on the planet, it is also the number one cause of environmental ruin. Deforestation, habitat loss, and air and water pollution are all strongly correlated with per capita income.¶ Nor are citizens in the industrialized West immune from the health effects associated with reduced income. Academics have established that every $15 million reduction of aggregate income causes one statistical death. That stands to reason; the poorer we are, the less likely we are (on average) to eat well, exercise, procure necessary health care services, and avoid unhealthy lifestyles. This effect alone suggests that in the U.S., greenhouse gas abatement, on the scale suggested by the Stern report, would cost more than 8,800 lives per year

## War

### Warming leads to wars- 3 warrants.

Gramlich-12 (Samantha Gramlich, reporter at reagents earth sciences, “Global Warming = War?!”; Reagents Earth Sciences; July 2012;http://www.regentsearthscience.com/index.php?Itemid=119&id=964&option=com\_content&task=view)

Some of the things that Global Warming can cause: Drought, Flooding, Disease, Massive Hurricanes, Unbearable heat, and Starvation All of these can lead to a world that many people these days know very well, WAR. How can all of these be related to WAR? Heres how:¶ -Drought, Flooding: Because of many droughts and floods, people are stranded and don't have as many resources as they did before. Therefore, many people want to migrate to a different place, or steal the natural resources of others. This leads to WAR. ¶ ¶ -Starvation: This should be pretty obvious. If you did not have any food, and no one in your major area did, what would you do? You would not starve yourself! You would go to get other food, and when you get other food from other countries, they get angry and rebel against you. That also starts WARS. ¶ ¶ -Disease: People from other countries go into one country and bring new things. Including diseases. When mass amount of people get a disease, they find the source and kick them out. Again, People get angry, and start WARS.¶ ¶ Climate: change and conflict have gone hand-in-hand for the past 500 years, a study reveals. It is the first time that a clear link between war and changing global temperatures has been identified in historical data, according to the researchers involved. The results are also significant because some experts predict that current and future climate change may result in widespread global unrest and conflict.¶ ¶ "The on-going conflict in Darfur, Sudan was "a conflict that grew at least in part from desertification, and a scarcity of resources". Three effects: increasing food prices, a greater risk of death from starvation, and increased social tension, which leads to violent conflict."

## Laundry List

### Laundry list of climatic effects.

Nettleman and Khasnis 05 (Atul A. Khasnis, Mary D. Nettleman, Department of Medicine, Michigan State University, East Lansing, Michigan; “Global Warming and Infectious Disease”; Archieves of Medical Research; 4/1/09; http://www.sciencedirect.com/science/article/pii/S0188440905001517)

Discussion¶ Human infections are intricately linked to the global environment. By altering this environment, global warming has significant potential to intensify selected infectious diseases. Climatic effects are predicted to include crowding, famine, water contamination, human migration, and alterations in vector ecology, all of which increase infectious diseases. We have dealt with these problems in the past with varying success. Global warming will also cause economic strain that may divert public health resources from existing infections. Through planning and research, we can mitigate the health effects of global warming. Through policy, politics, and global cooperation, we may reduce the environmental problems that cause global warming.

### Laundry list of warming impacts.

Specter-12 (Michael Specter, writer at the New Yorker, “Is There a Technological Solution to Global Warming?”; The New Yorker; 5/14/12; http://www.newyorker.com/reporting/2012/05/14/120514fa\_fact\_specter?currentPage=all)

Tens of thousands of wildfires have already been attributed to warming, as have melting glaciers and rising seas. (The warming of the oceans is particularly worrisome; as Arctic ice melts, water that was below the surface becomes exposed to the sun and absorbs more solar energy, which leads to warmer oceans—a loop that could rapidly spin out of control.) Even a two-degree climb in average global temperatures could cause crop failures in parts of the world that can least afford to lose the nourishment. The size of deserts would increase, along with the frequency and intensity of wildfires. Deliberately modifying the earth’s atmosphere would be a desperate gamble with significant risks. Yet the more likely climate change is to cause devastation, the more attractive even the most perilous attempts to mitigate those changes will become

## Extinction

### Global warming leads to extinction.

Specter-12 (Michael Specter, writer at the New Yorker, “Is There a Technological Solution to Global Warming?”; The New Yorker; 5/14/12; http://www.newyorker.com/reporting/2012/05/14/120514fa\_fact\_specter?currentPage=all)

“We don’t know how bad this is going to be, and we don’t know when it is going to get bad,’’ Ken Caldeira, a climate scientist with the Carnegie Institution, told me. In 2007, Caldeira was a principal contributor to an I.P.C.C. team that won a Nobel Peace Prize. “There are wide variations within the models,’’ he said. “But we had better get ready, because we are running rapidly toward a minefield. We just don’t know where the minefield starts, or how long it will be before we find ourselves in the middle of it.”The Maldives, a string of islands off the coast of India whose highest point above sea level is eight feet, may be the first nation to drown. In Alaska, entire towns have begun to shift in the loosening permafrost. The Florida economy is highly dependent upon coastal weather patterns; the tide station at Miami Beach has registered an increase of seven inches since 1935, according to the National Oceanic and Atmospheric Administration. One Australian study, published this year in the journal Nature Climate Change, found that a two-degree Celsius rise in the earth’s temperature would be accompanied by a significant spike in the number of lives lost just in Brisbane. Many climate scientists say their biggest fear is that warming could melt the Arctic permafrost—which stretches for thousands of miles across Alaska, Canada, and Siberia. There is twice as much CO2 locked beneath the tundra as there is in the earth’s atmosphere. Melting would release enormous stores of methane, a greenhouse gas nearly thirty times more potent than carbon dioxide. If that happens, as the hydrologist Jane C. S. Long told me when we met recently in her office at the Lawrence Livermore National Laboratory, “it’s game over.”¶

## Impact Magnifier

### Warming is the key impact magnifier.

McMichael et al -12 (Tony McMichael, professor of population health, Australia Fellow (National Health and Medical Research Council) 1, Hugh Montgomery, professor of intensive care medicine, director2, Anthony Costello, professor of international child health, director“Spotlight: Climate Change Health risks, present and future, from global climate change”3/19/12; http://www.bmj.com/content/344/bmj.e1359.full)

Climate change thus acts as a force multiplier, amplifying the negative health impacts of other environmental stressors (such as land degradation, soil nitrification, depletion of freshwater stocks, ocean acidification, and biodiversity loss). Populations with high pre-existing rates of climate sensitive diseases and conditions, such as child diarrhoea, malaria, under-nutrition, asthma, atherogenic cardiovascular disease, and extreme heat exposures in workplace settings, could suffer large absolute increments in adverse health impact with relatively small changes in climate.45 Indeed, conservative extrapolation of estimates made for the year 2000 suggested that climate change is now causing some 200 000 premature deaths each year (from under-nutrition, diarrhoeal disease, malaria, and flooding), with over 90% of these occurring in low income countries (especially sub-Saharan Africa and South Asia), and 85% in children under 5 years of age.46