

## APPENDIX A: Summary of Distortions

### One Sided

#### *AIT:*

- Never acknowledges the indispensable role of fossil fuels in alleviating hunger and poverty, extending human life-spans, and democratizing consumer goods, literacy, leisure, and personal mobility.
- Never acknowledges the environmental, health, and economic benefits of climatic warmth and the ongoing rise in the air's CO<sub>2</sub> content.
- Never acknowledges the role of natural variability in shrinking the Snows of Kilimanjaro and other mountain glaciers.
- Never mentions the 1976 regime shift in the Pacific Decadal Oscillation (PDO), potentially a major cause of recent climate change in Alaska.
- Presents a graph tracking CO<sub>2</sub> levels and global temperatures during the past 650,000 years, but never mentions the most significant point: global temperatures were warmer than the present during each of the past four interglacial periods, even though CO<sub>2</sub> levels were lower.
- Neglects to mention that, due to the growth of urban heat islands, U.S. cities and towns will continually break temperature records, with or without help from global warming.
- Neglects to mention that global warming could reduce the severity of wintertime (frontal storms) by decreasing the temperature differential between colliding air masses.
- Highlights London's construction of the Thames River flood barrier as evidence of global-warming induced sea-level rise without mentioning that London is sinking two to six times faster than global sea levels are rising.
- Ignores the large role of natural variability in Arctic climate, never mentioning that Arctic temperatures in the 1930s equaled or exceeded those of the late 20<sup>th</sup> century, and that the Arctic during the early- to mid-Holocene was significantly warmer than it is today.
- Cites a study's finding that the number of recorded wildfires in North America has increased in recent decades but not the same study's finding that the total area burned decreased by 90% since the 1930s.
- Fosters the impression that global warming can only be good for bad things (algae, ticks) and bad for good things (polar bears, migratory birds)—nature re-imagined as a morality play.
- Cites Velicogna and Wahr (2006), who found an overall loss in Antarctic ice mass during 2002-2005, but ignores Davis et al. (2005), who found an overall ice mass gain during 1992-2003.
- Cites Turner et al. (2006), who found a 0.5°C to 0.7°C per decade wintertime warming trend in the mid-troposphere above Antarctica, as measured by weather balloons, but neglects to mention that Turner et al. found much less warming—about 0.15°C/decade—at the Antarctic surface, and that NASA satellites, which also measure troposphere temperatures, show a 0.12°C/decade Antarctic cooling trend since November 1978.
- Shows a picture of a garbage-strewn refuse dump in Mexico City to illustrate

the “collision between our civilization and the Earth”—as if blight and swill were the hallmarks of mankind’s interaction with nature.

- Sees “success” in the reduction of global population birth and death rates, but not in the fossil-energy-based civilization that has enabled mankind to increase its numbers more than six-fold since the dawn of the industrial revolution.
- Compares Haiti (deforestation) and the Dominican Republic (lush forest cover) to illustrate the impact of politics on the environment, but overlooks another key implication of the comparison: Poverty is the environment’s number one enemy.
- Notes that “much forest destruction” and “almost 30%” of annual CO<sub>2</sub> emissions come from “the burning of brushland for subsistence agriculture and wood fires used for cooking,” but never considers whether fossil energy restrictions would set back developing countries both economically and environmentally.
- Neglects to mention the circumstances that make it reasonable rather than blameworthy for America to be the biggest CO<sub>2</sub> emitter: the world’s largest economy, abundant fossil energy resources, markets integrated across continental distances, and the world’s most highly mobile population.
- Impugns the motives of so-called global warming skeptics but never acknowledges the special-interest motivations of those whose research grants, direct mail income, industrial policy privileges, carbon trading commissions, regulatory power, prosecutorial plunder, or political careers depend on keeping the public in a state of fear about global warming.
- Castigates former White House official Phil Cooney for editing U.S. Government climate change policy documents, without ever considering the scientific merits of Cooney’s editing.
- Waxes enthusiastic about cellulosic ethanol, a product with no commercial application despite 30 years of government-funded research, and neglects to mention that corn-based ethanol, a product in commercial use for a century, is still more costly than regular gasoline despite oil prices exceeding \$70 a barrel.
- Blames Detroit’s financial troubles on the Big Three’s high-volume production of SUVs—even though U.S. automakers probably would not even exist today had they emphasized ‘climate-friendly’ vehicles in the 1990s—rather than the staggering payments U.S. auto companies must make for employee benefit packages negotiated decades ago.
- Touts Denmark’s wind farms without mentioning any of the well-known drawbacks of wind power: cost, intermittency, avian mortality, site depletion, and scenic degradation.
- Never addresses the obvious criticism that the Kyoto Protocol is all pain for no gain and that policies tough enough to measurably cool the planet would be a “cure” worse than the alleged disease.
- Touts a study by Robert Socolow and Stephen Pacala (S&P), allegedly demonstrating how existing technologies could reduce CO<sub>2</sub> emissions to 1970 levels, without mentioning that S&P is a response to Hoffert et al. (2002), a

team of 18 energy experts, who concluded that, “CO<sub>2</sub> is a combustion product vital to how civilization is powered; it cannot be regulated away.”

## **Misleading**

### ***AIT:***

- Implies that a two-page photograph of Perito Moreno Glacier in Argentina shows that the glacier is melting away, even though the glacier’s terminal boundary has not changed in 90 years.
- Implies that, throughout the past 650,000 years, changes in CO<sub>2</sub> levels preceded and largely caused changes in global temperature, whereas the causality mostly runs the other way, with CO<sub>2</sub> changes trailing global temperature changes by hundreds to thousands of years.
- Belittles as ideologically motivated the painstaking and now widely-accepted methodological critiques by Canadians Steve McIntyre and Ross McKittrick of the Hockey Stick reconstruction of Northern Hemisphere climate history.
- Distracts readers from the main hurricane problem facing the United States: the ever-growing, politically-subsidized concentration of population and wealth in vulnerable coastal regions.
- Ignores the societal factors that typically overwhelm climatic factors in determining people’s risk of damage or death from hurricanes, floods, drought, tornadoes, wildfires, and disease.
- Implies that the 2006 tropical cyclone season in Australia was unusually active and, thus, symptomatic of global warming. In contrast, NOAA describes the season as “near average.”
- Cites increases in insurance payments to victims of hurricanes, floods, drought, tornadoes, wildfires, and other natural disasters as evidence of a global-warming ravaged planet, even though the increases are chiefly due to socioeconomic factors such as population growth and development in high risk coastal areas and cities.
- Re-labels as “major floods” (a category defined by physical magnitude) a chart of “damaging floods” (a category defined by socioeconomic and political criteria).
- Re-labels as “major wildfires” (a category defined by physical magnitude) a chart of “recorded wildfires” (a category reflecting changes in data collection and reporting, such as increases in the frequency and scope of satellite monitoring).
- Conflates the oceanic Thermohaline Circulation (THC), a convective system primarily driven by differences in salinity and sea temperatures, with the Gulf Stream, a wind-driven system energized primarily by the Earth’s spin and the lunar tides, exaggerating the risk of a big chill in Europe from a weakening of the THC.
- Presents a graph showing the number of annual closings of the Thames River tidal barriers from 1930 to the present, even though the modern barrier system became operational in 1983. This apples-to-oranges comparison conveys the false impression that London faced no serious flood risk until recent decades.
- Blames global warming for the increase of “invasive alien species” in Switzerland, never mentioning that the species in question were broad-leafed evergreen trees and shrubs deliberately introduced into Swiss parks and gardens

as long as 200 years ago.

- Blames global warming for the decline “since the 1960s” of the Emperor Penguin population in Antarctica, implying that the penguins are in peril, their numbers dwindling as the world warms. In fact, the population declined in the 1970s and has been stable since the late 1980s.
- Implies that a study, which found that none of 928 science articles (actually abstracts) disputed that IPCC’s conclusion that rising greenhouse gas levels likely caused most of the warming of the past 50 years, shows that Gore’s apocalyptic view of global warming is the “consensus” view among climate scientists.
- Reports that 48 Nobel Prize-winning scientists accused Bush of distorting science, without mentioning that the scientists acted as members of a 527 political group set up to promote the Kerry for President Campaign.
- Misrepresents the auto companies’ position in their lawsuit to overturn California’s CO<sub>2</sub> emissions law, neglecting to mention that CO<sub>2</sub> standards are de facto fuel economy standards and that federal law prohibits states from regulating fuel economy.
- Confuses fuel efficiency (the amount of useful work per unit of fuel consumed) with fuel economy (miles per gallon), falsely portraying U.S. cars and trucks as inefficient compared to their European and Japanese counterparts.

### **Exaggerated**

#### ***AIT:***

- Exaggerates the certainty and hypes the importance of the alleged link between global warming and the frequency and severity of tropical storms.
- Hypes the importance of NOAA running out of names (21 per year) for Atlantic tropical storms in 2005, and the fact that some storms continued into December. The practice of naming storms only goes back to 1953, and storm detection capabilities have improved dramatically since the 1950s, so the “record” number of named storms in 2005 may be an artifact of the data. Also, Atlantic storms continued into December in several previous years including 1878, 1887, and 1888.
- Never explains why anyone should be alarmed about the current Arctic warming, considering that our stone-age ancestors survived (and likely benefited from) the much stronger and longer Arctic warming known as the Holocene Climate Optimum.
- Portrays the cracking of the Ward Hunt ice shelf in 2002 as a portent of doom, even though the shelf was merely a remnant of a much larger Arctic ice formation that had already lost 90% of its area during 1906-1982.
- Claims polar bears “have been drowning in significant numbers,” based on a report that found four drowned polar bears in one month in one year, following an abrupt storm.
- Claims global warming is creating “ecological niches” for “invasive alien species,” never mentioning other, more important factors such as increases in trade, tourism, and urban heat islands. For example, due to population growth, Berlin warmed twice as much during 1886-1898 as the IPCC estimates the entire world warmed in the 20<sup>th</sup> century.

- Blames global warming for pine beetle infestations that likely have more to do with increased forest density and plain old mismanagement.
- Portrays the collapse in 2002 of the Larson-B ice shelf—a formation the “size of Rhode Island”—as harbinger of doom. For perspective, the Larson-B was 180<sup>th</sup> the size of Texas and 1/246<sup>th</sup> the size of the West Antarctic Ice Sheet (WAIS).
- Warns that the break-off of floating ice shelves like Larson B accelerates the flow of land-based ice behind them. However, researchers found that the speedup was not observable beyond about 10 km inland, and that decelerations occurred only one year later.
- Presents a graph suggesting that China’s new fuel economy standards are almost 30% more stringent than the current U.S. standards. According to the World Resources Institute, the Chinese standards are only about 5% more stringent.

### **Speculative**

#### ***AIT:***

- Warns of impending water shortages in Asia due to global warming but does not check whether there is any correlation between global warming and Eurasian snow cover (there isn’t). Also, if Tibetan glaciers melt, that should increase water availability in the coming decades.
- Claims that CO<sub>2</sub> concentrations in the Holocene never rose above 300 ppm in pre-industrial times, and that the current level (380 ppm) is “way above” the range of natural variability. A study of leaf stoma remains indicates that, in the early Holocene, CO<sub>2</sub> levels exceeded 330 ppm for centuries and reached 348 ppm—roughly the CO<sub>2</sub> level in 1987.
- Claims that a Scripps Oceanography Institute study shows that ocean temperatures during the past 40 years are “way above the range of natural variability.” Proxy data indicate that the Atlantic Ocean off the West Coast of Africa was warmer than present during the Medieval Warm Period.
- Blames global warming for the record number of typhoons hitting Japan in 2004. Local meteorological conditions, not average global temperatures, determine the trajectory of particular storms, and data going back to 1950 show a greater number of tropical cyclones in the Western North Pacific during the late 1960s and early 1970s than in recent decades.
- Blames global warming for the record-breaking 37-inch downpour in Mumbai, India, in July 2005, even though there has been no trend in Mumbai rainfall for the month of July in 45 years.
- Blames global warming for recent floods in China’s Sichuan and Shandong provinces, even though far more damaging floods struck those areas in the 19<sup>th</sup> and early 20<sup>th</sup> centuries.
- Blames global warming for the disappearance of Lake Chad, a disaster more likely stemming from a combination of regional climate variability and societal factors such as overgrazing.
- Claims global warming is drying out soils all over the world, whereas pan evaporation studies indicate that, in general, the Earth’s surface is becoming

wetter.

- Presents one climate model's projection of increased U.S. drought as authoritative even though another leading model forecasts increased wetness, and most of the United States (outside the Southwest) became wetter during 1925-2003.
- Blames global warming for the severe drought that hit the Amazon in 2005. RealClimate.Org, a web site set up to debunk global warming "skeptics," concluded that it is not possible to link the drought to global warming.
- Warns of a positive feedback whereby CO<sub>2</sub>-induced warming melts tundra, releasing more CO<sub>2</sub> locked up in frozen soils. An alternative scenario is also plausible: The range of carbon-storing vegetation expands as tundra thaws.
- Claims global warming endangers polar bears even though polar bear populations are increasing in Arctic areas where it is warming and declining in Arctic areas where it is cooling.
- Blames global warming for Alaska's "drunken trees" (trees rooted in previously frozen tundra, which sway in all directions as the ice melts), ignoring the possibly large role of the 1976 PDO shift.
- Blames rising CO<sub>2</sub> levels for recent declines in Arctic sea ice, ignoring the potentially large role of natural variability. *AIT* never mentions that wind pattern shifts may account for much of the observed changes in sea ice, or that the Canadian Arctic Archipelago had considerably less sea ice during the early Holocene.
- Warns that meltwater from Greenland could disrupt the Atlantic thermohaline circulation based on research indicating that a major disruption occurred 8,200 years ago when a giant ice dam burst in North America, allowing two lakes to drain rapidly into the sea. *AIT* does not mention that the lakes injected more than 100,000 cubic kilometers of freshwater into the sea, whereas Greenland ice melt contributes a few hundred cubic kilometers a year.
- Claims global warming is "disrupting millions of delicately balanced ecological relationships among species" based on a study showing that, in the Netherlands, caterpillars are hatching two weeks earlier than the peak arrival season of caterpillar-eating migratory birds. *AIT* claims the birds' "chicks are in trouble," yet the researcher found "no demonstrable effect" on the bird population during the past 20 years.
- Warns that global warming is destroying coral reefs, even though today's main reef builders evolved and thrived during periods substantially warmer than the present.
- Warns that a doubling of pre-industrial CO<sub>2</sub> levels to 560 ppm will so acidify seawater that all optimal areas for coral reef construction will disappear by 2050. This is not plausible. Coral calcification rates have increased as ocean temperatures and CO<sub>2</sub> levels have risen, and today's main reef builders evolved and thrived during the Mesozoic Period, when atmospheric CO<sub>2</sub> levels were five times current concentrations for millions of years.
- Links global warming to toxic algae bloom outbreaks in the Baltic Sea that can be entirely explained by record-high phosphorus levels, record-low nitrogen-to-phosphorus levels, and local meteorological conditions.

- Asserts without evidence that global warming is causing more tick-borne disease (TBD). An Oxford University study found no relationship between climate change and TBD in Europe.
- Blames global warming for recent malaria outbreaks in Kenya, even though malaria was common in Nairobi in the 1920s-1940s, and several studies attribute the current problem to decreased spraying of homes with DDT, anti-malarial drug resistance, and incompetent public health programs.
- Insinuates that global warming is a factor in the emergence of some 30 “new” diseases over the last three decades, but cites no supporting research or evidence.
- Blames global warming for the decline “since the 1960s” of the Emperor Penguin population in Antarctica based on speculation that warm sea temperatures in the 1970s reduced the birds’ main food source. An equally plausible explanation is that Antarctic ecotourism, which became popular in the 1970s, disturbed the rookeries.
- Cites the growing number of Thames River barrier closings as evidence of global warming-induced sea level rise, even though UK authorities close the barriers to keep water in as well as to keep tidal surges out.
- Warns of “significant and alarming structural changes” in the submarine base of West Antarctic Ice Sheet (WAIS), but does not tell us what those changes are or why they are “significant and alarming.” The melting and retreat of the WAIS “grounding line” has been going on since the early Holocene. At the rate of retreat observed in the 1990s, the WAIS should disappear in about 7,000 years.
- Warns that vertical water tunnels (“moulins”) are lubricating the Greenland Ice Sheet, increasing the risk that it will “slide” into the sea. Summertime glacier flow acceleration associated with moulins is tiny. Moulins in numbers equal to or surpassing those observed today probably occurred in the first half of the 20<sup>th</sup> century, when Greenland was as warm as or warmer than the past decade, with no major loss of grounded ice.
- Presents 10 pages of before-and-after “photographs” showing what 20 feet of sea level rise would do to the world’s major coastal communities. There is no credible evidence of an impending collapse of the great ice sheets. We do have fairly good data on ice mass balance changes and their effects on sea level. Zwally et al. (2005) found a combined Greenland/Antarctica ice-loss-sea-level-rise equivalent of 0.05 mm per year during 1992-2002. At that rate, it would take a full millennium to raise sea level by just 5 cm.
- Forecasts an increase in U.S. renewable energy production during 1990-2030 more than twice that projected by the U.S. Energy Information Administration.

**Wrong  
AIT:**

- Presents as glaciologist Lonnie Thompson’s reconstruction of tropical climate history a graph that is in fact the “Hockey Stick” reconstruction of Northern

Hemisphere climate history.

- Claims Thompson's reconstruction of climate history proves the Medieval Warm Period was "tiny" compared to the warming observed in recent decades. It doesn't. Four of Thompson's six ice cores indicate that several decades of the Medieval Warm Period were as warm as or warmer than any recent decade.
- Calls carbon dioxide the "most important greenhouse gas." Water vapor is the leading contributor to the greenhouse effect.
- Claims Venus is too hot and Mars too cold to support life due to differences in atmospheric CO<sub>2</sub> concentrations (they are nearly identical), rather than differences in atmospheric densities and distances from the Sun (both huge).
- Claims scientists have validated the "Hockey Stick" climate reconstruction, according to which the 1990s were likely the warmest decade of the past millennium and 1998 the warmest year. It is now widely acknowledged that the Hockey Stick was built on a flawed methodology and inappropriate data. Scientists continue to debate whether the Medieval Warm period was warmer than recent decades.
- Assumes that CO<sub>2</sub> levels are increasing at roughly 1 percent annually. The actual rate is half that.
- Assumes a linear relationship between CO<sub>2</sub> levels and global temperatures, whereas the actual CO<sub>2</sub>-warming effect is logarithmic, meaning that the next 100-ppm increase adds less heat than the previous 100-ppm increase.
- Claims the rate of global warming is accelerating, whereas the rate has been constant for the past 30 years—roughly 0.17°C/decade.
- Blames global warming for Europe's killer heat wave of 2003—an event caused by an atmospheric circulation anomaly.
- Blames global warming for Hurricane Catarina, the first South Atlantic hurricane on record, which struck Brazil in 2004. Catarina formed not because the South Atlantic was unusually warm (sea temperatures were cooler than normal), but because the air was so much colder it produced the same kind of heat flux from the ocean that fuels hurricanes in warmer waters.
- Claims that 2004 set an all-time record for the number of tornadoes in the United States. Tornado frequency has not increased; rather, the detection of smaller tornadoes has increased. If we consider the tornadoes that have been detectable for many decades (F-3 or greater), there is actually a downward trend since 1950.
- Blames global warming for a "mass extinction crisis" that is not, in fact, occurring.
- Blames global warming for the rapid coast-to-coast spread of the West Nile virus. North America contains nearly all the climate types in the world—from hot, dry deserts to boreal forests, to frigid tundra—a range that dwarfs any small alteration in temperature or precipitation that may be related to atmospheric CO<sub>2</sub> levels. The virus could not have spread so far so fast, if it were climate-sensitive.
- Cites Tuvalu, Polynesia, as a place where rising sea levels force residents to evacuate their homes. In reality, sea levels at Tuvalu fell during the latter half

of the 20<sup>th</sup> century and even during the 1990s, allegedly the warmest decade of the millennium.

- Claims sea level rise could be many times larger and more rapid “depending on the choices we make or do not make now” concerning global warming. Not so. The most aggressive choice America could make now would be to join Europe in implementing the Kyoto Protocol. A leading climate modeler estimates the treaty would avert only 1 cm of sea level rise by 2050 and 2.5 cm by 2100.
- Accuses Exxon Mobil of running a “disinformation campaign” designed to “reposition global warming as theory, rather than fact,” even though two clicks of the mouse reveal that Exxon Mobil acknowledges global warming as a fact.
- Claims Bush hired Phil Cooney to “be in charge” of White House environmental policy. This must be a surprise to White House Council on Environmental Quality Chairman James Connaughton, who hired Cooney and was his boss at the CEQ.
- Claims the European Union’s emission trading system (ETS) is working “effectively.” In fact, the ETS is not reducing emissions and operates as a wealth transfer scheme.
- Claims U.S. firms won’t be able to sell American-made cars in China because Beijing has set higher fuel economy standards. This is equivalent to saying U.S. firms won’t be able to sell cars in India until all U.S.-made cars are built to drive on the left side of the road.