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## **A Skeptic's Primer on Al Gore's *An Inconvenient Truth* One-Sided, Misleading, Exaggerated, Speculative, Wrong**

**By Marlo Lewis, Jr.\***

Former Vice President Al Gore's Oscar-winning film, *An Inconvenient Truth* (*AIT*) and its companion book purport to be a non-partisan, non-ideological exposition of climate science. In reality, the film is a computer-enhanced lawyer's brief for global warming alarmism and energy rationing. The only facts and studies Gore considers are those convenient to his scare-them-green agenda. And in numerous instances, he distorts the evidence he cites.

This *On Point* is organized as follows. Section I highlights some of the many distortions in *AIT*. Sections II, III, and IV examine Gore's scariest claims. He blames the devastation of Hurricane Katrina on global warming and warns of a warming-triggered mini-Ice Age in Europe and of catastrophic sea-level rise. Section V challenges the moral bona fides of carbon-suppression schemes like the Kyoto Protocol. Sections II through V are referenced to the book version of *AIT*.

**I. Distortions.** Some distortion is inevitable in any popular presentation of technical scientific and economic issues. But in *AIT* we find example after example—and all serve to promote alarm and regulatory activism. *AIT* is not a balanced assessment of the issues. Following is a partial list of *AIT*'s many distortions grouped by category.

### **One-Sided**

- 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.<sup>1</sup>
- Never acknowledges the environmental, health, and economic benefits of climatic warmth and the ongoing rise in the air's carbon dioxide (CO<sub>2</sub>) content.<sup>2</sup>

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- Never acknowledges the role of natural variability in shrinking mountain glaciers.<sup>3</sup>
- 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.<sup>4</sup>
- Neglects to mention that aggregate mortality and mortality rates related to extreme weather events fell dramatically during the 20<sup>th</sup> century.<sup>5</sup>
- Mentions that the greenhouse effect keeps the planet habitably warm but not that weather processes keep the planet habitably cool, creating the false impression that greenhouse gases have an unlimited power to warm the atmosphere.<sup>6</sup>
- 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,<sup>7</sup> and that the Arctic during the early- to mid-Holocene was significantly warmer than it is today.<sup>8</sup>
- 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 mobile population.

### **Misleading**

- Implies that, throughout the past 650,000 years, changes in carbon dioxide levels preceded and largely caused changes in global temperature, whereas the causality runs mostly the other way, with CO<sub>2</sub> changes trailing global temperature changes by hundreds to thousands of years.<sup>9</sup>
- 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, ignoring research that finds no long-term trend once weather-related damages are adjusted for changes in population, wealth, and inflation.<sup>10</sup>
- Re-labels as “major floods” (a category defined by physical magnitude) a chart of “damaging floods” (a category defined by socioeconomic and political criteria), inflating the importance of climate factors in flood risk.<sup>11</sup>
- Reports that many U.S. cities and towns broke summer heat records in 2005 but does not mention that cities and towns get warmer as they grow—the urban heat island effect.<sup>12</sup>
- Cites increases in the annual number of Thames River barrier closings as evidence of increased flood risk from global warming. However, in recent years the barriers were often closed to keep tide water in as well as tidal surges out.<sup>13</sup>
- Blames global warming for the increase of “invasive alien species” in Switzerland. The species in question were “exotic” plants deliberately introduced into Swiss parks and gardens as long as 200 years ago.<sup>14</sup>
- Blames global warming for the decline “since the 1960s” of the Emperor Penguin population in Antarctica, implying an ongoing warming-related threat. In fact, the decline took place in the 1970s—possibly due to the advent of Antarctic ecotourism—and the population has been stable since the late 1980s.<sup>15</sup>
- Falsely implies that a survey, which found that none of 928 science articles

- (actually abstracts) disputed the IPCC's conclusion that most recent warming is likely due to rising greenhouse gas levels,<sup>16</sup> shows that Gore's apocalyptic view of global warming and call for regulatory action are the scientific "consensus."
- 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.<sup>17</sup>
  - Confuses fuel efficiency (the amount of useful work per unit of fuel consumed) with fuel economy (miles per gallon),<sup>18</sup> falsely portraying U.S. cars and trucks as inefficient compared to their European and Japanese counterparts.

### **Exaggerated**

- Hypes the importance of the National Oceanic and Atmospheric Administration (NOAA) running out of names (21 per year) for Atlantic tropical storms in 2005. Yet the practice of naming storms only goes back to 1953,<sup>19</sup> and storm detection capabilities have improved dramatically since the 1950s. Non-land-falling storms that once would have gone undetected are recorded today.
- Claims that polar bears "have been drowning in significant numbers," but this is based on a single report that four polar bears drowned in one month of one year, following an abrupt windstorm.<sup>20</sup>
- Portrays the collapse in 2002 of the Larson-B ice shelf—a formation the "size of Rhode Island"—as a 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).

### **Speculative**

- Blames global warming for the record-breaking 37-inch downpour in Mumbai, India, in July 2005, even though there has been no long-term increase in Mumbai rainfall for the month of July in 45 years.<sup>21</sup>
- Blames global warming for recent floods in China's Shandong and Sichuan provinces, even though far more damaging floods struck those areas in the 19<sup>th</sup> and early 20<sup>th</sup> centuries—Shandong in 1887 and 1931 and Sichuan in 1954.<sup>22</sup>
- Warns of water shortages in Asia as Tibetan glaciers recede, even though Asia's river systems are fed by annual snowmelt, and snow cover increased in southern China (the Tibetan plateau) during the latter half of the 20<sup>th</sup> century.<sup>23</sup>
- 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.<sup>24</sup>
- Blames global warming for the severe drought that hit the Amazon in 2005. RealClimate.Org—a website set up by Gavin Schmidt of NASA, Michael Mann of the University of Virginia, and others to debunk global warming "skeptics"—concluded that it is not possible to link the drought to global warming.<sup>25</sup>
- Blames global warming for Europe's killer heat wave of 2003—an event caused by an atmospheric circulation anomaly.<sup>26</sup>
- Claims that 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 same researcher whom Gore cites found “no demonstrable effect” on the bird population during the past 20 years.<sup>27</sup>
- Warns that global warming is destroying coral reefs, even though today’s main reef builders evolved and thrived during periods when the world was 10-15°C warmer than the present.<sup>28</sup>
  - 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.<sup>29</sup>
  - Blames global warming for outbreaks of toxic blue-green algae blooms in the Baltic Sea in 2005—a phenomenon that an international panel of experts attributed to record-high phosphorus levels, record-low nitrogen-to-phosphorus levels, and regional wind patterns.<sup>30</sup>
  - Claims ocean temperatures are “way above” the range of natural variability—yet proxy data indicate that the Atlantic Ocean off the West Coast of Africa and the Bermuda Rise were warmer during the Medieval Warm Period.<sup>31</sup>
  - 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.
  - Warns that half the Greenland Ice Sheet and half the West Antarctic Ice Sheet could break off and slide into the sea or melt, raising sea levels by 20 feet in our lifetimes or those of our children. No scientific studies support this claim.

## Wrong

- Claims there is a “strong, new emerging consensus” linking global warming to an increase in hurricane intensity and duration. The World Meteorological Organization recently stated that, “no consensus has been reached on this issue.”<sup>32</sup>
- Claims that Nairobi, Kenya, was above the mosquito line and thus malaria-free until recent global warming. In fact, malaria epidemics were common in Nairobi during the 1920s to the 1940s.<sup>33</sup> The resurgence of malaria in East Africa is due to decreased spraying of homes with DDT, anti-malarial drug resistance, and inadequate public health programs.<sup>34</sup>
- Claims that glaciologist Lonnie Thompson’s reconstruction of climate history from Tibetan and Andean ice cores proves the Medieval Warm Period was “tiny” compared to the warming of 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.<sup>35</sup>
- Calls carbon dioxide the “most important greenhouse gas.” Water vapor is the leading contributor to the greenhouse effect.<sup>36</sup>
- Claims the rate of global warming is accelerating. In fact, the rate has been remarkably constant—roughly 0.17°Celsius per decade from 1976 to 2005.<sup>37</sup>
- 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 that it produced the same kind of heat flux from the ocean that fuels hurricanes in warmer waters.<sup>38</sup>
- 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, there is actually a downward trend since 1950.<sup>39</sup>

## II. Is Global Warming Making Hurricanes Stronger?

**AIT:** “And then came Katrina...The consequences were horrendous. There are no words to describe them.” (pp. 94-95)

To blame global warming for Hurricane Katrina is sheer demagoguery. Kerry Emanuel of the Massachusetts Institute of Technology, the very scientist whose work Gore cites to claim a “strong...emerging consensus” that global warming is increasing hurricane power (see below), cautioned against attempts to link Katrina and other recent Atlantic storms to global warming.<sup>40</sup> More importantly, Katrina was the worst natural disaster in U.S. history not because the hurricane was so powerful—it was a category 3 storm by the time it made landfall—but because the federal government had failed to build adequate flood defenses for New Orleans.<sup>41</sup>

**AIT:** “[T]here is now a strong, new emerging consensus that global warming is indeed linked to a significant increase in both the duration and intensity of hurricanes.” (p. 81)

The scientific jury is still out. Kerry Emanuel found that hurricane strength— a combination of wind speed and storm duration, which he calls the “power dissipation index” (PDI)—increased by 50 percent since the mid-1970s, and that the increase is highly correlated with rising sea surface temperatures.<sup>42</sup> However, other experts question these results.

Roger Pielke, Jr. of the University of Colorado found that once hurricane damage is normalized for changes in population, wealth, and the consumer price index, there is no long-term change in hurricane damage—evidence against the hypothesis that hurricanes are becoming more destructive.<sup>43</sup> Christopher Landsea of NOAA, noting no trend in the PDI for land-falling U.S. hurricanes, suggests that Emanuel’s finding may be an “artifact of the data”—a consequence of advances in satellite technology, which have improved detection and analysis of non-land-falling hurricanes.<sup>44</sup>

Philip Klotzbach of Colorado State University found “a large increasing trend in tropical cyclone intensity and longevity for the North Atlantic basin and a considerable decreasing trend for the North Pacific,” but essentially no trend in other tropical cyclone-producing ocean basins.<sup>45</sup> Similarly, Kossin et al. (2007) found an upward trend in hurricane intensity in the Atlantic basin during the past 23 years but not in any of the world’s other five hurricane basins.<sup>46</sup>

**AIT:** “The emerging consensus linking global warming to the increasingly destructive power of hurricanes has been based in part on research showing a significant increase in the number of category 4 and 5 hurricanes.” (p. 89)

Peter Webster and colleagues found a significant increase in the number of major hurricanes during 1970-2004.<sup>47</sup> In contrast, Klotzbach found only a “small increase in global Category 4-5 hurricanes from the period 1986-1995 to the period 1996-2005,” and considers it likely that “improved observational technology” accounts for that small increase.

Klotzbach, Webster, and Kossin all found an increase in hurricane intensity in recent decades only in the Atlantic. But the Atlantic basin accounts for less than 15 percent of the world’s hurricane activity, so if *global* warming is the cause, why is the Atlantic the only basin where hurricanes are unequivocally getting stronger?

Note also that the study periods in Klotzbach, Webster, and Kossin are of fairly short duration. How do we know that the increase in Atlantic hurricane intensity is a linear trend rather than the upswing of a natural oscillation?

Virginia State climatologist Patrick Michaels investigated Atlantic storm intensity using pre-1970 data from the National Hurricane Center.<sup>48</sup> He found that the “trend” observed by the Webster team disappears once data going back to 1940 are included. The number and percentage of intense Atlantic storms from 1940 to 1970 were about equal to the number and percentage of intense storms from 1970 to 2004.<sup>49</sup>

In reality, the “consensus” of the scientific community is that there is “no consensus” about the relationship between global warming and hurricane strength. That was the verdict of some 120 scientists at a meeting of the World Meteorological Organization:

“The possibility that greenhouse gas induced global warming may have already caused a substantial increase in some tropical cyclone indices has been raised (e.g. Mann and Emanuel, 2006), but no consensus has been reached on this issue.”<sup>50</sup>

### III. Will Global Warming Cause a Mini-Ice Age?

**AIT:** Gore describes the functioning of Atlantic branch of the thermohaline circulation (THC), the oceanic “conveyor belt” that, along with the Gulf Stream, help keep Europe relatively warm in the wintertime. The sinking of dense (cold and salty) water at the northern end of the belt pulls warm surface water up towards Europe from the equator. Gore worries that “the rapid melting of Greenland ice” will decrease the density of North Atlantic surface water to the point where it sinks too slowly to drive the conveyor. According to Gore, such an event happened “10,000 years ago,” and “The Gulf Stream virtually stopped...Consequently, Europe went back into an ice age for another 900 to 1,000 years.” Gore worries that it could happen again. (p. 149)

Gore assumes that it is the THC that keeps London and Paris 15-20°F warmer than New York City during the winter. Richard Seager of Columbia University’s Lamont-Doherty Earth Observatory and his colleagues contend that oceanic heat transport is simply not strong enough to account for Europe’s milder winters. The key factor, they contend, is a

difference in the warmth of the prevailing winds that blow across northeastern North America and Western Europe. During the winter, “South-westerlies bring warm maritime air into Europe and north-westerlies bring frigid continental air into north-eastern North America.”<sup>51</sup> If this finding is correct, then Europe should continue to enjoy mild winters even if global warming weakens the THC.<sup>52</sup>

Seager also questions the theory that a shutdown of the THC triggered the Younger Dryas, the mini-ice age of “10,000 years ago” or so, to which Gore refers. Some scientists have speculated that a sudden release of fresh water into the Labrador Sea, following the collapse of a giant ice dam in North America, shut down the THC and caused the Younger Dryas. “But,” says Seager, “the Younger Dryas was not a purely North Atlantic phenomenon: Manifestations of it also appeared in the tropical and southern Atlantic, in South America, and in Asia.” Moreover, “evidence has emerged that the Younger Dryas began long before the breach that allowed freshwater to flood the North Atlantic.”<sup>53</sup>

Even if a freshening of the North Atlantic did shut down THC thousands of years ago, the recurrence of such an event today is highly implausible. The rupture of the Laurentide ice dam allowed more than 100,000 cubic kilometers of fresh water to pour into the North Atlantic.<sup>54</sup> The rate of fresh water infusion from Greenland today is a comparative trickle—an estimated 224±41 cubic kilometers per year.<sup>55</sup>

Northern Hemisphere climate during the last interglacial period (roughly 130,000 to 118,000 years ago) was relatively stable, even though Greenland experienced summertime temperatures 4° to 5° Celsius warmer than the present for several millennia, and even though sea levels rose to several meters higher than present.<sup>56</sup> These conditions may eventually have produced a “deep-water reorganization” that began the transition to the next ice age—but only after 8,000 years of comparative climate stability.<sup>57</sup>

Is the THC slowing down? Bryden et al. (2005)<sup>58</sup> found that it is, but Meinen et al. (2006)<sup>59</sup> and Schott et al. (2006)<sup>60</sup> found that it isn't. Latif et al. (2006)<sup>61</sup> observed a “strengthening” of the THC since 1980. There certainly is no indication that Europe is cooling due to any modification of the THC.

Finally, Gore erroneously conflates the THC with the Gulf Stream. The THC is a convective system driven chiefly by the sinking of dense (cold and salty) surface water in the high northern latitudes. The Gulf Stream, on the other hand, is a wind-driven system, energized primarily by the Earth's spin. As one scientist put it, the Gulf Stream is safe as long as the Earth turns and the wind blows.<sup>62</sup> Thus, even in climate models that project a weakening of the THC in the 21<sup>st</sup> century, Europe continues to warm, “albeit more slowly than the rest of the world.”<sup>63</sup>

#### **IV. Will Sea Levels Rise by 20 Feet?**

**AIT:** “The East Antarctic ice shelf is the largest ice mass on the planet and had been thought to be still increasing in size. However, two new studies in 2006

showed overall volumes of ice in Antarctica appear to be declining, and that 85 percent of the glaciers there appear to be accelerating their flow toward the sea.” (p. 190)

Of the two studies to which Gore alludes, I can identify only one. Isabella Velicogna and John Wahr of the University of Colorado used satellite measurements of gravity fluctuations to infer ice-mass changes in Antarctica.<sup>64</sup> Gore gives the impression that all of Antarctica, including the East Antarctic Ice Sheet (EAIS), is losing ice mass. In fact, almost all the ice loss observed by Velicogna and Wahr comes from the smaller West Antarctic ice sheet (WAIS).<sup>65</sup> Gore neglects to mention that the study looked at only three years of data—from mid-2002 to mid-2005.

Davis et al. (2005) examined Antarctic ice mass balance changes over a somewhat longer period, from May 1992 to May 2003.<sup>66</sup> The Davis team also found that the WAIS was losing mass. However, the larger EAIS was gaining mass, from snow accumulation, at a faster rate, yielding a net increase in Antarctic ice. The overall effect was to *reduce* sea-level rise by 0.09 mm/year.

As Patrick Michaels points out, Velicogna and Wahr begin their analysis at the peak of ice mass accumulation in the Davis study’s longer record. “This means that the apparent decline in the record of Velicogna and Wahr may simply be the short-term correction to an anomalously high mass gain during a period of long-term mass growth,” says Michaels. “But who is to know for sure? It is impossible to tell anything about a trend in a system as vast as Antarctica with less than three years worth of data.”<sup>67</sup>

Two other recent studies—both from 2006—also indicate a positive mass balance in Antarctica. Chen et al. found that, during April 2002 to November 2005, ice mass gains in the EAIS exceeded ice mass losses in the WAIS.<sup>68</sup> Wingham et al. found that, during 1992-2003, mass gains from accumulating snow on the Antarctic Peninsula and within East Antarctica exceeded ice mass loss in West Antarctica.<sup>69</sup>

Also in 2006, Van den Broeke et al. found no net change in the size of Antarctica’s ablation zones (areas where ice mass losses in the summer exceed winter snow accumulations), and no change in the rate of ice mass loss, during the 25-year period from 1980 to 2004.<sup>70</sup> In other words, global warming appears to have had no impact on overall Antarctic ice mass balance during the past quarter century.

**AIT:** “East Antarctica is still considered far more stable over long periods of time than the West Antarctic ice shelf, which is propped up against the tops of islands. This peculiar geology is important for two reasons: first, its weight is resting on land and therefore its mass has not displaced seawater as floating ice would. So if it melted or slipped off its moorings into the sea, it would raise sea levels worldwide by 20 feet. Second, the ocean flows underneath large sections of this ice shelf, and as the ocean has warmed, scientists have documented significant and alarming structural changes on the underside of the ice shelf.” (p. 190)

Gore provides no information allowing the reader to assess whether the “structural changes on the underside of the ice sheet” are “significant” or “alarming.” He probably refers to research by NASA’s Robert Bindschadler showing that water from the intermediate depths—the warmest water in polar oceans—is melting the submarine base of the glaciers, accelerating their flow towards the sea.<sup>71</sup>

Bindschadler is careful to point out “the absence of any indication of increasing sea surface temperature” in the polar oceans, and notes that “warmth in the ocean arriving from lower latitudes would raise the temperature of this intermediate water a fraction of a degree, hardly enough to initiate a sudden glacier acceleration.” So why are glaciers accelerating?

According to Bindschadler, once the intermediate layer penetrates the moraine, or sill—the barrier-like accumulation of boulders, gravel, and other debris deposited by the glacier as it retreats from its maximum extent—the water reaches the “grounding line”—the boundary of the ice sheet’s base on the sea floor. “Increased pressure at these greater depths lowers the melting point of this ice, increasing the melting efficiency of the warmer water. Rapid melting results.” This explanation suggests a process that would occur with or without global warming. It also suggests a process that cannot be stopped.

How long has this process been going on? For roughly 8,000 years, according to Conway et al. (1999). The Conway team mapped the retreat of the Ross Ice Shelf grounding line—the southernmost boundary of the WAIS—since the last glacial maximum. They found that “most recession occurred in the middle to late Holocene in the absence of substantial sea level or climate forcing.”<sup>72</sup> The Ross Ice Shelf today is approximately one-third its original size. They concluded that current grounding line retreat is natural and will continue even in the absence of greenhouse forcing:

“We suggest that modern grounding-line retreat is part of ongoing recession that has been under way since the early to mid-Holocene time. It is not a consequence of anthropogenic warming or recent sea level rise. In other words, the future of the WAIS may have been predetermined when grounding-line retreat was triggered in early Holocene time. Continued recession and perhaps even complete disintegration of the WAIS within the present interglacial period could well be inevitable.”

When might the “inevitable” occur? Conway and colleagues state that, “if the grounding line continues to pull back at the present [i.e. 1990s] rate, complete deglaciation will take about 7,000 years.”

Such estimates are uncertain, because ice sheets are dynamic systems that can change in unpredictable ways. Nonetheless, the “significant and alarming structural changes” to which Gore alludes have likely been going on for millennia, with no help from man-made global warming. Gore cites no specific evidence to justify fears of an impending collapse of the WAIS, or any significant portion of it.

**AIT:** “These pools [of meltwater on the top of the Greenland glacier] have always been known to occur, but the difference now is that there are many more of them covering a far larger area of the ice...[T]his meltwater is now believed to keep sinking all the way down to the bottom, cutting deep crevasses and vertical tunnels that scientists call ‘moulins.’ When the water reaches the bottom of the ice, it lubricates the surface of the bedrock and destabilizes the ice mass, raising fears that the ice mass will slide more quickly toward the ocean.” (p. 192)

To illustrate these points, Gore presents a photograph and a diagram from a study of “moulins” by Zwally et al. (2002), published in the journal *Science*.<sup>73</sup> The study found that moulins accelerate glacial movement in Greenland in the summertime, but only by a few percentage points. For example, glacial flow in 1998 increased from 31.3 centimeters per day in winter to 40.1 in July, falling back to 29.8 in August, increasing annual glacial movement by 4.7 meters. Were it not for satellite sensing systems, nobody would even notice!

Moulins in numbers equal to or surpassing those observed today probably occurred during the first half of the 20<sup>th</sup> century, because Greenland during most of the decades between 1915 and 1965 was as warm as or warmer than the decade from 1995 to 2005.<sup>74</sup> This means there should have been the same or greater acceleration in glacial flow. Yet there was no catastrophic loss of grounded ice.

**AIT:** “If Greenland melted or broke up and slipped into the sea—or if half of Greenland and half of Antarctica melted or broke up and slipped into the sea, sea levels worldwide would increase by between 18 and 20 feet.” (p. 196) More than 100 million people living in Beijing, Shanghai, Calcutta, and Bangladesh would be “displaced, “forced to move,” or “have to be evacuated.” (pp. 204-206)

“The Greenland ice sheet cannot slip into the sea,” as one reviewer, William Robert Johnston, a physics doctoral student at the University of Texas at Dallas, explains, “since it is resting in a bowl-shaped depression produced by its own weight, surrounded by mountains which permit only limited glacier outflow to the sea.”<sup>75</sup> Also, as just noted, there is no evidence that “moulins” are breaking up the ice sheet.

How long would it take to melt half of Greenland? A modeling study reviewed by the IPCC found that a sustained 5.5°C warming of Greenland would melt about half the glacier and increase sea level by 3 meters—about 10 feet—“over a thousand years.”<sup>76</sup>

Nobody knows how warm Greenland is going to be over the next thousand years. We do have data on the net rate of ice mass loss in Antarctica and Greenland. Greenland’s glaciers are thinning at the edges and thickening in the interior. If the gains are subtracted from the losses, the net volume of ice lost during 2003 to 2005 was ~101 gigatons a year.<sup>77</sup> At that rate, Greenland is contributing 0.28 mm of sea-level rise per year—about 1 inch per century.

Zwally et al. (2005) used satellite altimetry to examine ice mass changes in Greenland,

East Antarctica, and West Antarctica during 1992-2002.<sup>78</sup> They found a combined sea-level-rise-ice-loss-equivalent rate of 0.05 mm per year. At that rate, comments the Center for the Study of Carbon Dioxide and Global Change, “it would take a full millennium to raise global sea level by just 5 cm.”<sup>79</sup>

## V. Is Carbon Suppression Moral?

**AIT:** “We can’t afford inaction any longer, and frankly, there’s just no excuse for it. We all want the same thing: for our children and the generations after them to inherit a clean and beautiful planet capable of supporting a healthy human civilization. That goal should transcend politics....This isn’t an ideological debate with two sides, pro and con. There is only one Earth, and all of us who live on it share a common future.” (p. 287) “And that is what is at stake. Our ability to live on Planet Earth—to have a future as a civilization. I believe this is a moral issue.” (p. 298)

Nothing is more political than the claim to transcend politics, because it implies that anyone who actually represents truth (science) and virtue (morality) deserves to rule. Gore castigates his political opponents while posing as an apolitical Mr. Science. When Gore calls global warming a “moral issue,” he implies those who disagree with him have no ideas worth considering or motives worth respecting. How moral is that?

Gore never considers the obvious moral objection to his agenda—its potentially catastrophic impacts on the world’s poor. Stabilizing atmospheric carbon dioxide levels is not even remotely possible unless China, India, and other developing countries restrict their use of carbon-based energy.<sup>80</sup> Consequently, the Kyoto Protocol’s advocates view the treaty as just a “first step.”<sup>81</sup> But the global economy is moving in exactly the opposite direction. Demand for fossil energy is growing, especially in developing countries. The Energy Information Administration projects a 71 percent increase in global energy consumption between 2003 and 2030, with three quarters of the increase occurring in developing countries.<sup>82</sup> And in 2030 as in 2003, fossil fuels are projected to supply about 86 percent of world energy consumption.<sup>83</sup>

Energy poverty is a scourge, shortening the lives and impairing the health of untold millions of people around the globe. An estimated 1.6 billion people lack access to electricity, and some 2.4 billion people still rely on traditional biomass—wood, crop waste, and dung—for cooking and heating.<sup>84</sup> Daily indoor air pollution for these people is many times dirtier than outdoor in the world’s most polluted cities, and kills about 2.8 million people a year, most of them women and children.<sup>85</sup> Reliance on traditional biomass also takes a heavy toll on forests and wildlife habitat.

The real inconvenient truth is that nobody knows how to meet current much less future global energy needs with low- and non-emitting technologies.<sup>86</sup> It is not moral to put an energy-starved world on an energy diet.

Even in wealthy countries like the United States, energy taxes or their regulatory

equivalent can inflict hardship on low-income households.<sup>87</sup> Millions of families already feel pinched by the high cost of gasoline, natural gas, and home heating oil. A Kyoto-style system would make energy even more costly for consumers.

Many U.S. politicians professed outrage in 2005 when gasoline prices spiked above \$3.00 a gallon. Consumers pay twice as much for gasoline in some European countries, due to heavy motor fuel taxes.<sup>88</sup> Yet from 1990 to 2004, EU transport sector CO<sub>2</sub> emissions increased almost 26 percent and are projected under current policies to be 35 percent above 1990 levels in 2010.<sup>89</sup> How much higher than European-level gasoline prices does Gore think Americans should have to pay? Gore should at least admit that the pursuit of carbon stabilization has the potential to do more harm than good.

**Conclusion.** *An Inconvenient Truth* purports to be a non-ideological exposition of climate science and common sense morality. As this *On Point* shows, *AIT* uses science selectively and often dubiously to advance a political agenda of alarm and energy rationing.

Gore calls global warming a “moral issue” but somehow he sees nothing immoral in the attempt to make fossil energy scarcer and more costly in a world where 1.6 billion people have never flipped a light switch and billions more are too poor to own an automobile.

Nearly every significant statement that Vice President Gore makes regarding climate science and climate policy is either one-sided, misleading, exaggerated, speculative, or wrong. In light of these numerous distortions, *AIT* is ill suited to serve as a guide to climate science and climate policy for the American people.

## Notes

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<sup>1</sup> On the liberating effects of energy abundance, see Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World* (Cambridge: 2001), pp. 118-119.

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<sup>4</sup> On the greater warmth of previous interglacial periods, see Petit, J.R., J. Jouzel, D. Raynaud, N.I. Barkov, J.-M. Barnola, I. Basile, M. Bender, J. Chappellaz, M. Davis, G. Delaygue, M. Delmotte, V.M. Kotlyakov, M. Legrand, V.Y. Lipenkov, C. Lorius, L. Pepin, C. Ritz, E. Saltzman, and M. Stievenard, “Climate and Atmospheric History of the Past 420,000 Years from the Vostok Ice Core, Antarctica,” *Nature* 399 (1999): 429–36, reviewed by the Center for the Study of Carbon Dioxide and Global Change, <http://www.co2science.org/scripts/CO2ScienceB2C/articles/V2/N12/C1.jsp>

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