



## Countering Kerry's Catastrophic Climate Claims

By Kenneth P. Green

*On November 10, 2009, Kenneth P. Green was invited to testify before the Senate Committee on Finance about global warming. A summary of his testimony appears on the next page. During the course of his testimony, Senator John Kerry (D-Mass.) asked Green a number of questions about the science of global warming. His responses are printed here.*

### Not One Peer-Reviewed Paper Contradicts the “Consensus” View of the Climate Crisis

Kerry asserted that not one peer-reviewed paper contradicts the “consensus” view that greenhouse gas emissions will cause devastating consequences, and that we must limit their emissions radically to avoid the maximum “consensus” value of two degrees Celsius, which Kerry claimed was the point at which catastrophic damage would occur to the Earth’s climate. I offered to provide several.

Perhaps the central issue in climate science involves estimates of the sensitivity of the climate to anthropogenic greenhouse gas emissions. Sensitivity refers to just how much warming results from an increased concentration of greenhouse gases in the atmosphere. The following papers demonstrate that the climate’s sensitivity to greenhouse gases may be considerably lower than the Intergovernmental Panel on Climate Change (IPCC) claims—so much lower, in fact, that the warming we would expect from doubling the amount of CO<sub>2</sub> in the atmosphere would be quite modest (well below two degrees Celsius) and offer very little risk. Do these papers truly reflect the reality of how the climate works? Perhaps they do, perhaps they do not, but it cannot be argued that they do not exist.

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In a recently published article, Richard S. Lindzen and Yong-Sang Choi<sup>1</sup> use data from NASA’s Earth Radiation Budget Experiment to assess the climate’s sensitivity to greenhouse gases. In this article, they demonstrate empirically that the climate sensitivity to a doubling of greenhouse gases is only about 0.5 degrees Celsius, one-sixth of the IPCC estimate of 3 degrees Celsius.

Another study by Roy W. Spencer and William D. Braswell<sup>2</sup> also examines the data from NASA’s Clouds and the Earth’s Radiant Energy System satellites. It concludes that “eight years of the latest NASA satellite measurements of variations in both the Earth’s radiative budget, and in lower atmospheric temperature, suggest two important conclusions related to the global warming issue. The first is that the sensitivity of the climate system is much lower than the IPCC climate models suggest; that is, the climate system is dominated by negative feedbacks.” Spencer and Braswell also conclude that “taken together, these results suggest that the IPCC’s claim that global warming is mostly man-made is, at best, premature.”

A study by Nicola Scafetta and Richard C. Willson<sup>3</sup> examines data regarding changes in total solar irradiance (TSI), concluding: “This finding has evident repercussions for climate change and solar physics. Increasing TSI between 1980 and 2000 could have contributed significantly to global warming during the last three

decades. . . . Current climate models . . . have assumed that the TSI did not vary significantly during the last 30 years and have therefore underestimated the solar contribution and overestimated the anthropogenic contribution to global warming.” If the warming of the last three decades has been driven by increases in solar output, it cannot also have been driven by human greenhouse gas emissions. This suggests that anthropogenic greenhouse gases have a low sensitivity value.

After studying satellite and radiosonde (weather balloon) data, **John D. McLean, Chris R. de Freitas, and Robert M. Carter**<sup>4</sup> concluded that ocean patterns dominate climate change in the tropics. They write, “Overall the results suggest that the Southern Oscillation exercises a consistently dominant influence on mean global temperature, with a maximum effect in the tropics, except for periods when equatorial volcanism causes ad hoc cooling. That mean global tropospheric temperature has for the last 50 years fallen and risen in close accord with the SOI [Southern Oscillation Index] of 5–7 months earlier shows the potential of natural forcing mechanisms to account for most of the temperature variation.”

**In another study, Petr Chylek and Ulrike Lohmann**<sup>5</sup> “use the temperature, carbon dioxide, methane, and dust concentration record from the Vostok ice core to deduce the aerosol radiative forcing during the Last Glacial Maximum to Holocene transition and the climate sensitivity.” Their research “suggests a 95% likelihood of warming between 1.3 and 2.3 K due to doubling of atmospheric concentration of CO<sub>2</sub>.” (A degree Kelvin [K] is equal to a degree Celsius [C].) These values are considerably lower than the sensitivity values estimated by the IPCC.

**In another study,**<sup>6</sup> the authors use satellite and surface temperature observations to study the effect of aerosols on climate and to examine climate sensitivity. They find “that the climate sensitivity is reduced by at least a factor of 2 when direct and indirect effects of decreasing aerosols are included, compared to the case where the radiative forcing is ascribed

### **Key Points from Kenneth P. Green’s Testimony before the Senate Committee on Finance:**

1. Cap-and-trade is an inappropriate mechanism for the control of greenhouse gases. I observed that this was not only my opinion, but also that of the economists who first developed the concept, as well as people like James Hansen and the organization Earth First!, neither of which are known to dismiss climate change as a problem. I have subsequently learned that Greenpeace also opposes cap-and-trade as a mechanism for controlling greenhouse gases.
2. Cap-and-trade will fail to control carbon emissions because of inevitable corruptions of the scheme in the political process and afterward in trading markets.
3. Cap-and-trade will, however, cap economic growth, as every time the economy grows, we use more energy, which will increase permit prices, eventually stifling growth.
4. Higher energy prices will increase the costs of goods and services, suppressing demand and killing jobs.
5. Higher energy prices will make American industry less competitive, leading to industry flight and more lost jobs, unless we wish to return to the days of tariff wars and unfree trade.
6. Current cap-and-trade legislation will cause economic winners and losers both regionally and sectorally across the United States, often unjustly transferring money from poorer communities to more wealthy communities.
7. Cap-and-trade will create a new class of poorly understood financial instruments that risk creating a bubble far larger than the one that recently knocked the economy into a deep recession.
8. By favoring biofuels, cap-and-trade will put a bounty on ecosystems and lead to massive conversion of forests and prairies into biofuel plantations.
9. The idea that current legislation can be described as a “jobs bill” is ludicrous. One hundred and fifty years of economics tells us that governments do not create jobs; they just move them around, invariably killing more than they create.

only to increases in atmospheric concentrations of carbon dioxide.”

**Sherwood B. Idso**<sup>7</sup> reviews various “natural experiments” that can reveal how sensitive the climate is to increasing concentrations of greenhouse gases and concludes: “Over the course of the past 2 decades, I have analyzed a number of natural phenomena that reveal how Earth’s near-surface air temperature responds to surface radiative perturbations. These studies all suggest that a 300 to 600 ppm [parts per million] doubling of the atmosphere’s CO<sub>2</sub> concentration could raise the planet’s mean surface air temperature by only about 0.4°C. Even this modicum of warming may never be realized, however, for it could be negated by a number of planetary cooling forces that are intensified by warmer temperatures and by the strengthening of biological processes that are enhanced by the same rise in atmospheric CO<sub>2</sub> concentration that drives the warming. Several of these cooling forces have individually been estimated to be of equivalent magnitude, but of opposite sign, to the typically predicted greenhouse effect of a doubling of the air’s CO<sub>2</sub> content, which suggests to me that little net temperature change will ultimately result from the ongoing buildup of CO<sub>2</sub> in Earth’s atmosphere.”

Many other studies challenging various elements of the “consensus” that anthropogenic greenhouse gases are causing, or will cause, catastrophic climate change can be found at the website [www.populartechnology.net](http://www.populartechnology.net), which boasts 450 peer-reviewed publications challenging different elements of the “climate crisis” paradigm that both Kerry and former vice president Al Gore wholeheartedly endorse.

## Ice-Free Arctic by 2013

When I mentioned that the claims that we would see an ice-free Arctic by 2013 had been withdrawn, Kerry asked for documentation. I offered to provide some. There is considerable controversy over the claim of an ice-free Arctic by 2013, as can be seen in the following articles:

In an article by **Jonathan Amos**,<sup>8</sup> other Arctic ice researchers refute the assertion that an ice-free Arctic is likely by 2013. The article quotes Mark Serreze, a research scientist with the U.S. National Snow and Ice Data Center, saying, “A few years ago, even I was thinking 2050, 2070, out beyond the year 2100, because that’s what our models were telling us. But as we’ve

seen, the models aren’t fast enough right now; we are losing ice at a much more rapid rate. My thinking on this is that 2030 is not an unreasonable date to be thinking of.” Serreze also told the BBC that Wieslaw Maslowski, the climate scientist who announced that Arctic summers could be ice free by 2013, “is probably a little aggressive in his projections, simply because the luck of the draw means natural variability can kick in to give you a few years in which the ice loss is a little less than you’ve had in previous years.”

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An article by **David Adam** quotes<sup>9</sup> Vicky Pope, the head of climate change advice at the British Met Office Hadley Centre, saying that “there is little evidence to support claims that Arctic ice has reached a tipping point and could disappear within a decade or so, as some reports have suggested.” The article states that “summer ice extent in the Arctic, formed by frozen sea water, has collapsed in recent years,” and notes that the amount of ice in September of last year was 34 percent lower than the average amount of ice present since satellite measurements began in 1979. Pope says, “The record-breaking losses in the past couple of years could easily be due to natural fluctuations in the weather, with summer ice increasing again over the next few years.” She goes on to say, “It is easy for scientists to grab attention by linking climate change to the latest extreme weather event or apocalyptic prediction. But in doing so, the public perception of climate change can be distorted. The reality is that extreme events arise when natural variations in the weather and climate combine with long-term climate change.”

According to the **British Met Office**,<sup>10</sup> the 2007 Arctic ice-melt was an anomaly unrelated to climate

change. The article says, “Modeling of Arctic sea ice by the Met Office Hadley Centre climate model shows that ice invariably recovers from extreme events, and that the long-term trend of reduction is robust—with the first ice-free summer expected to occur between 2060 and 2080. It is unlikely that the Arctic will experience ice-free summers by 2020.”

## Peer-Reviewed Publishing?

Finally, Kerry seemed to think it somehow damning that I do not choose to publish in the peer-reviewed climate literature. First—as I pointed out when I introduced myself—while I am an environmental scientist by training, I have chosen to work on policy analysis, which I believe is as important as, or more important than, the science.

However, I would challenge the very premise Kerry makes, which is that peer review is a meaningful indicator of trustworthiness. Plenty of research suggests that peer review is deeply flawed, biased in favor of both extreme and “positive” claims, resistant to nonconfirmation studies, and highly incestuous because review committees regularly screen out divergent viewpoints and consist of peers who coauthor work with each other. While most research on problems with peer review involves medical literature, there is every reason to believe the same problems plague climate research.

As Drummond Rennie, M.D., deputy editor (West) of the *Journal of the American Medical Association*, writes, “There seems to be no study too fragmented, no hypothesis too trivial, no literature too biased or too egotistical, no design too warped, no methodology too bungled, no presentation of results too inaccurate, too obscure, and too contradictory, no analysis too self-serving, no argument too circular, no conclusions too trifling or too unjustified, and no grammar and syntax too offensive for a paper to end up in print.”<sup>11</sup> Peer review determines where rather than whether a paper should be published, Rennie says. However, from time to time, “shoddy science” ends up even in the most prestigious journals.

Examining peer review in the context of genetically modified food, Richard Horton, editor of the medical journal *The Lancet*, has observed that “the mistake, of course, is to have thought that peer review was any more than a crude means of discovering the acceptability—not the validity—of a new finding. Editors and scientists alike insist on the pivotal importance of peer review. We portray peer review to the public as a quasi-sacred

process that helps to make science our most objective truth teller. But we know that the system of peer review is biased, unjust, unaccountable, incomplete, easily fixed, often insulting, usually ignorant, occasionally foolish, and frequently wrong.”<sup>12</sup>

For additional information on the limitations of peer review, I point you to the following papers:

**John P. A. Ioannidis**,<sup>13</sup> examines the various elements that can lead to studies being published in peer-reviewed literature despite failing to accurately represent reality, and concludes that “most research findings are false for most research designs and for most fields.”

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**Neal S. Young, John P. A. Ioannidis, and Omar Al-Ubaydli**<sup>14</sup> examine current publication practices in an economic framework and conclude: “The current system of publication in biomedical research provides a distorted view of the reality of scientific data that are generated in the laboratory and clinic. This system can be studied by applying principles from the field of economics. The winner’s curse, a more general statement of publication bias, suggests that the small proportion of results chosen for publication are unrepresentative of scientists’ repeated samplings of the real world. The self-correcting mechanism in science is retarded by the extreme imbalance between the abundance of supply (the output of basic science laboratories and clinical investigations) and the increasingly limited venues for publication (journals with sufficiently high impact).” As an example, they point out that “an empirical evaluation of the 49 most-cited papers on the effectiveness of medical interventions, published in highly visible journals in 1990–2004, showed that a quarter of the randomised trials and five of six non-randomised studies had already been contradicted or found to have been exaggerated by 2005. The delay between the reporting of an initial positive study and subsequent publication of concurrently performed but negative results is measured in years.”

**Jeffrey D. Scargle**<sup>15</sup> has studied what is called the “file-drawer” problem in scientific research. That is, if a laboratory runs one hundred experiments that obtain a negative result and only one that reaches a positive result (which can happen by chance), the laboratory can simply publish the one study and relegate the others to the file drawer or trash can. The authors conclude: “Publication bias arises whenever the probability that a study is published depends on the statistical significance of its results. This bias, often called the file-drawer effect because the unpublished results are imagined to be tucked away in researchers’ file cabinets, is a potentially severe impediment to combining the statistical results of studies collected from the literature. With almost any reasonable quantitative model for publication bias, only a small number of studies lost in the file drawer will produce a significant bias.”

In a study of articles from *Nature* and the *British Medical Journal (BMJ)*, **Emili García-Berthou and Carles Alcaraz**<sup>16</sup> looked for erroneous statistics. They found that “at least one such error appeared in 38% and 25% of the papers of *Nature* and *BMJ*, respectively. In 12% of the cases, the significance level might change one or more orders of magnitude.”

In a column by **David F. Horrobin**,<sup>17</sup> the long-time critic of peer review observes that “far from filtering out junk science, peer review may be blocking the flow of innovation and corrupting public support of science.”

For a specific example of the incest problem in climate research, see **the report to Congress prepared by Edward J. Wegman, David W. Scott, and Yasmin H. Said**.<sup>18</sup> In this report, solicited by Congress itself, leading statistician Wegman and colleagues were asked to study claims disputing the iconic “hockey stick” chart famously produced by Michael Mann at the University of Virginia. The “hockey stick” is a “reconstruction” of global average temperatures stretching far into the past (over one thousand years) that shows a relatively smooth decline in temperatures over that time until about 1900, at which time temperatures appear to increase sharply. Not only did the Wegman panel uphold criticisms of that chart, it found improprieties in the review process: “In particular, if there is a tight relationship among the authors and there are [sic] not a large number of individuals engaged in a particular topic area, then one may suspect that the peer review process does not fully vet papers before they are published. Indeed, a common practice among associate

editors for scholarly journals is to look in the list of references for a submitted paper to see who else is writing in a given area and thus who might legitimately be called on to provide knowledgeable peer review. Of course, if a given discipline area is small and the authors in the area are tightly coupled, then this process is likely to turn up very sympathetic referees. These referees may have coauthored other papers with a given author. They may believe they know that author’s other writings well enough that errors can continue to propagate and indeed be reinforced.”

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Wegman, Scott, and Said then set to examine whether or not such close relationships existed in the paleoclimate community, and they note that “in our further exploration of the social network of authorships in temperature reconstruction, we found that at least 43 authors have direct ties to Dr. Mann by virtue of coauthored papers with him. Our findings from this analysis suggest that authors in the area of paleoclimate studies are closely connected and thus ‘independent studies’ may not be as independent as they might appear on the surface.”

Such incestuous relationships almost certainly also exist in other subcommunities of climate research, including predictive modeling, climate sensitivity estimation, greenhouse gas residence times, dendroclimatology, and more.

The existence of such “tribalism” in climate science has recently been thrown into stark relief by the public release of a vast quantity of files and e-mails that were either taken from the computer system of the University of East Anglia by hackers or posted to the Internet by a whistle-blower. The University of East Anglia is home to the Climatic Research Unit, until recently considered one of the most important climate research institutions in the world, and is a supplier of information to the IPCC.

More than one thousand e-mails and two thousand other documents were posted to the Internet; it will likely take months to fully explore the archives, and verifying the authenticity of individual documents may be impossible.<sup>19</sup> But from early inspection, there are strong suggestions that the researchers at the Climatic Research Unit, along with their colleagues elsewhere, actively sought to prevent contrary findings from being published in the peer-reviewed literature.

Here are some examples:

**From: Tom Wigley, January 20, 2005.** If you think that [James E.] Sayers is in the greenhouse skeptics camp, then, if we can find documentary evidence of this, we could go through official AGU [American Geophysical Union] channels to get him ousted.<sup>20</sup> [Author's note: Sayers, the editor of *Geophysical Research Letters*, was later ousted.]

**From: Michael E. Mann, March 11, 2003.** This was the danger of always criticising the skeptics for not publishing in the “peer-reviewed literature.” Obviously, they found a solution to that—take over a journal! So what do we do about this? I think we have to stop considering “Climate Research” as a legitimate peer-reviewed journal. Perhaps we should encourage our colleagues in the climate research community to no longer submit to, or cite papers in, this journal. We would also need to consider what we tell or request of our more reasonable colleagues who currently sit on the editorial board.<sup>21</sup>

**From: Edward Cook, June 4, 2003.** I got a paper to review (submitted to the *Journal of Agricultural, Biological, and Environmental Sciences*), written by a Korean guy and someone from Berkeley, that claims that the method of reconstruction that we use in dendroclimatology (reverse regression) is wrong, biased, lousy, horrible, etc. They use your Tornetrask recon as the main whipping boy. . . . If published as is, this paper could really do some damage. It is also an ugly paper to review because it is rather mathematical, with a lot of Box-Jenkins stuff in it. It won't be easy to dismiss out of hand as the math appears to be correct theoretically. . . . I am really sorry but I have to nag about that review—Confidentially I now need a hard and if required extensive case for rejecting—to support Dave Stahle's and really as soon as you can. Please.<sup>22</sup>

**From: Tom Wigley, April 24, 2003.** Mike's idea to get editorial board members to resign will probably not work—must get rid of [Hans] von Storch too, otherwise holes will eventually fill up with people like [David R.] Legates, [Robert C.] Balling, [Richard S.] Lindzen, [Patrick J.] Michaels, [S. Fred] Singer, etc. I have heard that the publishers are not happy with von Storch, so the above approach might remove that hurdle too.<sup>23</sup>

**From: Phil Jones, July 8, 2004.** I can't see either of these papers being in the next IPCC report. Kevin and I will keep them out somehow—even if we have to redefine what the peer-review literature is!<sup>24</sup>

Finally, Kerry implied that I had not said what I would do about the risk of climate change. This is incorrect. In my response to him, and other members of the committee, I offered to provide my latest paper on adaptation to the committee.<sup>25</sup> The summary is as follows: “The Earth's climate is prone to sharp changes over fairly short periods of time. Plans that focus simply on stopping climate change are unlikely to succeed; fluctuations in the Earth's climate predate humanity. Rather than try to make the climate static, policymakers should focus on implementing resilience strategies to enable adaptation to a dynamic, changing climate. Resilience strategies can be successful if we eliminate current risk subsidies and privatize infrastructure.”

## Notes

1. Richard S. Lindzen and Yong-Sang Choi, “On the Determination of Climate Feedbacks from ERBE Data,” *Geophysical Research Letters* 36, no. 16 (August 2009).

2. Roy W. Spencer and William D. Braswell, “Potential Biases in Feedback Diagnosis from Observations Data: A Simple Model Demonstration,” *Journal of Climate* 21 (November 2008): 5,624–28.

3. Nicola Scafetta and Richard C. Willson, “ACRIM-Gap and TSI Trend Issue Resolved Using a Surface Magnetic Flux TSI Proxy Model,” *Geophysical Research Letters* 36 (March 2009): doi:10.1029/2008GL036307.

4. John D. McLean, Chris R. de Freitas, and Robert M. Carter, “Influence of the Southern Oscillation on Tropospheric Temperature,” *Journal of Geophysical Research* 114 (July 2009): doi:10.1029/2008JD011637.

5. Petr Chylek and Ulrike Lohmann, “Aerosol Radiative Forcing and Climate Sensitivity Deduced from the Last Glacial

Maximum to Holocene Transition,” *Geophysical Research Letters* 35 (February 2008), doi:10.1029/2007GL032759.

6. Petr Chylek, Ulrike Lohmann, Manvendra Dubey, Micael Mishchenko, Ralph Kahn, and Atsumu Ohmura, “Limits on Climate Sensitivity Derived from Recent Satellite and Surface Observations,” *Journal of Geophysical Research* 112 (December 2007), doi:10.1029/2007JD008740.

7. Sherwood B. Idso, “CO<sub>2</sub>-Induced Global Warming: A Skeptic’s View of Potential Climate Change,” *Climate Research* 10 (1998): 69–82.

8. Jonathan Amos, “Arctic Summers Ice-Free ‘by 2013.’” BBC News, December 12, 2007, available at <http://news.bbc.co.uk/2/hi/7139797.stm> (accessed December 1, 2009).

9. David Adam, “‘Apocalyptic Climate Predictions’ Mislead the Public, Say Experts,” *Guardian.co.uk*, February 11, 2009, available at [www.guardian.co.uk/environment/2009/feb/11/climate-change-misleading-claims](http://www.guardian.co.uk/environment/2009/feb/11/climate-change-misleading-claims) (accessed December 1, 2009).

10. Met Office, “The Decline in Arctic Summer Sea Ice,” October 15, 2009, available at [www.metoffice.gov.uk/corporate/pressoffice/2009/pr20091015b.html](http://www.metoffice.gov.uk/corporate/pressoffice/2009/pr20091015b.html) (accessed December 1, 2009).

11. Andrew A. Skolnick, “The Maharishi Caper: Or How to Hoodwink Top Medical Journals,” *Science Writers: The Newsletter of the National Association of Science Writers* (Fall 1991), available at [www.aaskolnick.com/naswmav.htm](http://www.aaskolnick.com/naswmav.htm) (accessed December 2, 2009).

12. Richard Horton, “Genetically Modified Food: Consternation, Confusion, and Crack-up,” *The Medical Journal of Australia* 172 (2000): 148–49, available at [www.mja.com.au/public/issues/172\\_04\\_210200/horton/horton.html](http://www.mja.com.au/public/issues/172_04_210200/horton/horton.html) (accessed December 2, 2009).

13. John P. A. Ioannidis, “Why Most Published Research Findings are False,” *Public Library of Science Medicine* 2, no. 8 (August 2005): e124, available at [www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0020124](http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0020124) (accessed December 1, 2009).

14. Neal S. Young, John P. A. Ioannidis, and Omar Al-Ubaydli, “Why Current Publication Practices May Distort Science,” *Public Library of Science Medicine* 5, no. 10 (October 2008): e201, available at [www.plosmedicine.org/article/](http://www.plosmedicine.org/article/)

[info:doi/10.1371/journal.pmed.0050201](http://info:doi/10.1371/journal.pmed.0050201) (accessed December 1, 2009).

15. Jeffrey D. Scargle, “The ‘File-Drawer’ Problem in Scientific Inference,” *Journal of Scientific Exploration* 14, no. 1 (2000): 91–106, available at [www.scientificexploration.org/journal/jse\\_14\\_1\\_scargle.pdf](http://www.scientificexploration.org/journal/jse_14_1_scargle.pdf) (accessed December 2, 2009).

16. Emili García-Berthou and Carles Alcaraz, “Incongruence between Test Statistics and P Values in Medical Papers,” *BMC Medical Research Methodology* 4, no. 13 (2004): doi:10.1186/1471-2288-4-13, available at [www.biomedcentral.com/1471-2288/4/13](http://www.biomedcentral.com/1471-2288/4/13) (accessed December 1, 2009).

17. David F. Horrobin, “Something Rotten at the Core of Science,” *Trends in Pharmacological Sciences* 22, no. 2 (February 2001): 51–52.

18. House Subcommittee on Oversight and Investigations, *Ad-Hoc Committee Report on the ‘Hockey Stick’ Global Climate Reconstruction*, 109th Cong., 2nd sess., 2006, available at [www.climateaudit.org/pdf/others/07142006\\_Wegman\\_Report.pdf](http://www.climateaudit.org/pdf/others/07142006_Wegman_Report.pdf) (accessed December 1, 2009).

19. Keith Johnson, “Climate Emails Stoke Debate,” *Wall Street Journal*, November 29, 2009.

20. Tom Wigley, e-mail message to Michael E. Mann, January 20, 2005, available at [www.anelegantchaos.org/cru/emails.php?eid=484&filename=1106322460.txt](http://www.anelegantchaos.org/cru/emails.php?eid=484&filename=1106322460.txt) (accessed December 2, 2009).

21. Michael E. Mann, e-mail message to Phil Jones, “rbradley,” and “mhughes,” March 11, 2003, available at [www.anelegantchaos.org/cru/emails.php?eid=295&filename=1047388489.txt](http://www.anelegantchaos.org/cru/emails.php?eid=295&filename=1047388489.txt) (accessed December 2, 2009).

22. Edward Cook, e-mail message to Keith Briffa, June 4, 2003, available at [www.anelegantchaos.org/cru/emails.php?eid=321&filename=1054756929.txt](http://www.anelegantchaos.org/cru/emails.php?eid=321&filename=1054756929.txt) (accessed December 2, 2009).

23. Tom Wigley, e-mail message to Timothy Carter, April 24, 2003, available at [www.anelegantchaos.org/cru/emails.php?eid=307&filename=1051190249.txt](http://www.anelegantchaos.org/cru/emails.php?eid=307&filename=1051190249.txt) (accessed December 2, 2009).

24. Phil Jones, e-mail message to Michael E. Mann, July 8, 2004, available at [www.anelegantchaos.org/cru/emails.php?eid=419&filename=1089318616.txt](http://www.anelegantchaos.org/cru/emails.php?eid=419&filename=1089318616.txt) (accessed December 2, 2009).

25. Kenneth P. Green, “Climate Change: The Resilience Option,” *AEI Energy and Environment Outlook*, no. 4 (October 2009), available at [www.aei.org/outlook/100078](http://www.aei.org/outlook/100078).