

Sallie Baliunas, the Global Warming Debate, and Think Tank

Scholarship

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Public policy makers increasingly rely on the research of think tank scholars to guide their policy decisions. But who checks the accuracy of think tank scholar research? Unlike academic journal publishing, which follows a rigorous system of peer review and editorial oversight, think tanks publish opinion pieces without regard to the peer review process. Their policy publications are based not on pure academics, but on a complex interaction between academic, political, and economic interests. In Washington, there is no time to focus on the academic details. As Eric Altermann points out in his book *What Liberal Media?* think tank scholars “are expected to spend at least as much time networking with reporters and government staffers as on research.”¹ Efficient dissemination of information is as important as the information itself in the think tank business of knowledge.

Sallie Baliunas of the Marshall Institute fits Altermann’s think tank scholar profile well. Regarding her involvement in the global warming debate, she has spent less time on the scholarship of global warming and more time advocating the idea that it is simply a myth. She is a senior scientist at the Marshall Institute, which supports her writing of articles against the Kyoto treaty (“Bush right to oppose [Kyoto] treaty”)² and the promotion of the idea that global warming is a natural process caused by increased

radiation from the sun (“The Sun Also Warms”).³ Though she has published relatively little in academic journals on the issue, articles such as these are numerous in conservative political forums, such as the website *TechCentralStation.com*, “where free markets meet technology.”⁴ Though she is not considered a global warming expert by professional climate scientists, she is oft quoted by the anti-Kyoto folks as the expert voice that proves global warming is a hoax (see any article by Charli Coon of the Heritage Foundation⁵ or by Chris de Freitas⁶). Her global warming research has been funded, in part, by corporate oil interests.

Think Tanks

Baliunas’s association with think tanks does not make her scholarship automatically suspect. However, think tanks dwell in the grey area between scholarship and advocacy, and one must ask in which category Baliunas belongs. Think tanks cannot claim to be completely unbiased, because the majority of their funding comes from corporations, whose interests are not usually only academic, but also economic. Baliunas is an “Enviro-Sci Host” for *TechCentralStation.com*, a website sponsored by AT&T, ExxonMobil, General Motors Corporation, Intel, McDonalds, Microsoft, Nasdaq, National Semiconductor, PhRMA, and Qualcomm. Though *TechCentralStation.com* claims not to be influenced by sponsorship from these organizations, it would seem that sponsorship is dependent on expected results and opinions. An oil company, for example, would most likely not donate money to Earth First! or Greenpeace. It would be expected, however, to be extremely interested in research that suggests that fossil fuel emissions need no restrictions, which is an idea that Baliunas’s research supports.

Though the Marshall Institute (one of Baliunas's employers) claims to promote nothing but sound scientific scholarship and scientific literacy, by definition it is invested in economic and political interests. If it were a purely academic institution, it would have no investment in politics. However, it was founded with the intention "to conduct technical assessments of scientific issues with an impact on public policy." Traditionally, scientists are interested not in public policy, but in science. An institution dedicated to advising on scientific issues that affect public policy cannot claim to be scientifically unbiased, because public policy issues are not purely scientific issues.

Altermann asserts that think tanks are often not only biased in their research, but unacademic. Because no system exists for checking the academic merit of think tank scholarship (such as the peer review process), Altermann claims that much of think tank research would not stand up to the standards of more academically focused communities.⁷ He cites the extreme case of Charles Murray, whose non-peer reviewed and generally racist research gained national fame through the support of think tanks like the Olin Foundation, the Manhattan Institute, the American Enterprise Institute, and the Milwaukee-based Lynde and Harry Bradley Foundation.⁸ Without the support of these organizations, Murray's opinions would never have made the national stage, since alone he had no credentials and no funding.

Though Murray's case is an extreme example of biased and unscholarly research influencing public opinion (if not policy), it is, according to Altermann, "an odd but instructive tale with regard to just how easily conservatives can manipulate the 'So Called Liberal Media' and legitimate views once considered unspeakable in polite society."⁹ Similarly, Baliunas's views regarding global warming, which are dismissed in

the scientific community, have been legitimated in the conservative political community through the financial support of think tanks.

The Science of Global Warming

In order to understand why Baliunas's science is suspect, we have to understand something about the inherently complex and to date unsettled questions of climate science. Earth's climate system is extremely dynamic. The atmosphere makes life possible by simultaneously shielding us from harmful UV rays and trapping life-giving solar radiation. The atmosphere changes in order to maintain an energy balance. An average global surface and atmospheric temperature can be calculated by equating the incoming solar radiation to the outgoing infrared radiation, taking into account how much radiation the atmosphere absorbs and reflects. A change in the amount of incoming solar radiation or in the way the atmosphere reflects or absorbs heat can alter the average temperature.

Clouds contribute to both cooling and heating of the atmosphere. They cool the atmosphere by reflecting solar radiation, and heat it by trapping outgoing infrared radiation. Similarly, aerosols and carbon dioxide can scatter or absorb heat. Increased amounts of carbon dioxide in the atmosphere have slightly changed Earth's radiation balance by trapping radiation that might normally escape to space. The result is an increase in the average global surface temperature. The effect is not dramatic. According the Intergovernmental Panel on Climate Change, which publishes scientific opinion on climate change for policy makers, the surface temperature increased a little less than one degree Celsius during the 20th century.¹⁰

Figure 1 shows the conclusions of the Intergovernmental Panel on Climate Change (IPCC) regarding climate forcing by aerosols, carbon dioxide, and the sun. It shows the amount of cooling or warming that has occurred in response to altered levels of gases, aerosols, and solar output since 1750.

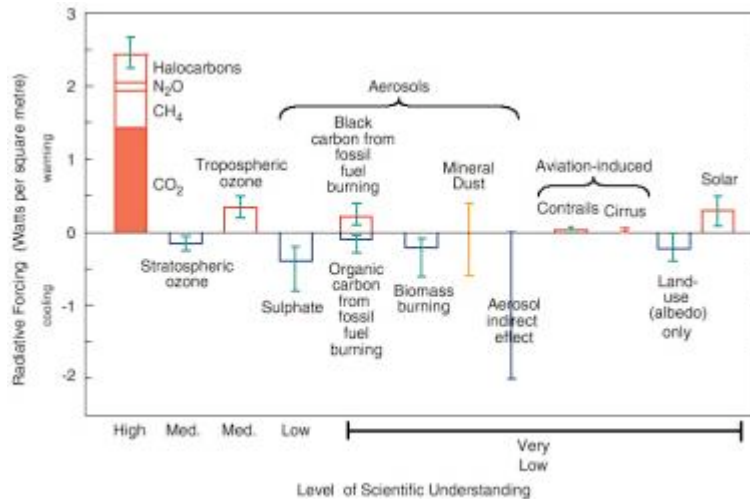


Figure 1. Scientific understanding of radiative forcing mechanisms since 1750.¹¹

The y-axis shows the amount of cooling or heating that has occurred in response to varying atmospheric conditions. The x-axis shows how well these changes are understood. The effect of Halocarbons, Nitrous Oxide, Methane, and Carbon Dioxide are well-understood mechanisms of climate forcing, shown on the left side of the graph in the category “High” level of scientific understanding. Scientists recognize that increased levels of these gases cause warming of the planet. Less understood are the effects of aerosols, aviation-induced contrails, and solar forcing on the atmosphere. Aerosols behave unpredictably, sometimes heating and sometimes cooling the atmosphere. The amount of radiation the sun emits changes with the sun’s cycle. Solar flares can cause

increased radiation to reach the earth, though the impact of this increased radiation is not well understood.

As the figure shows, one of the most understood climate forcing mechanisms, according to the IPCC, is carbon dioxide. One of the least understood climate forcing mechanisms is the sun. Baliunas challenges the well-established consensus that increased amounts of carbon dioxide warm the planet. Instead, she claims that solar forcing, one of the most poorly understood forcing mechanisms, is responsible for the observed rise in global average temperatures.

Baliunas's Controversial Research on Global Warming

Though Baliunas is not a trained climate scientist, she has sought legitimacy as one. She has not received it. Her expertise is solar astrophysics. Her educational background and her professional achievements confirm this. She received her Master's and Ph.D. degrees from Harvard, where she is now an astrophysicist. She has published over 200 articles in prestigious astrophysical journals related to her research on the sun and sun-like stars. Over the past ten years she has been studying the effect of solar variability and carbon dioxide on the Earth's climate. Despite a decade of research (in tandem with her astrophysical pursuits), her academic publications related to climate science pale in comparison to her published work in astrophysics. Out of her 200+ articles in scientific journals, only six are somewhat related to global warming.¹² The most cited is an article about *astrophysical* applications of the sun's influence on Earth's climate.¹³ The rest have been rarely cited or have sparked controversy.

The scientific consensus is that humans have caused the Earth to warm by increasing the amount of fossil fuels in the atmosphere. Baliunas disagrees with this consensus, though she has not produced significant evidence to support her claims.¹⁴ Her strongest arguments criticize the accuracy of current climate models. These models are, indeed, imperfect, and predict more warming than has been observed. Notwithstanding these imperfections, scientists see a strong correlation between increased emission of fossil fuels and an increased average global surface temperature, and are unconvinced by Baliunas's arguments that solar variability is to blame.¹⁵ In fact, her opinions have caused outrage among many climate scientists.

The controversy is centered on two articles that Baliunas and her colleague Willie Soon (and others) published in the peer-reviewed, multidisciplinary journal *Climate Research*. The first article, from 2001, was called "Modeling climatic effects of anthropogenic carbon dioxide emissions: unknown and uncertainties."¹⁶ The second was a proxy study of temperature data from the past 1000 years, which was an attempt to show that the 20th century has not been unusually warm.¹⁷

In response to Baliunas's first article, a comment and reply comment were published in *Climate Research*. The purpose of these comments, according to Otto Kinne, director of *CR*'s parent company, Inter-Research, is to "Offer an opportunity for fair intellectual exchanges....Comments are critical re-assessments of published works and Reply Comments are answers by the authors criticised."¹⁸ The comment criticized Baliunas's conclusions that attribution of late 20th century warming to CO₂ is not possible. The criticism came from six climate scientists who contributed to the IPCC's 2001 report on climate change.¹⁹ They defend their extensively researched conclusion

that increased CO₂, along with other forcing factors, has contributed to global warming. Accompanying the comment was “A word from the publisher” by the above-mentioned Inter-Research director, Otto Kinne. He acknowledges that dissenting views such as Baliunas’s are important: “An editor should be...courageous enough to accept scientifically sound work that challenges ‘holy cows.’”²⁰ At the same time he recognizes the controversy particular to global warming, and the dangers of “other interests” invading scientific investigations”

The growing influence of science on human societies . . . has recently caused forces to enter the scene that are not part of the scientific process in its original sense; forces that are primarily fuelled not by scientific fact or argument but by political or economical interests. These forces must not be allowed to compromise or distort established and proven methods of “truth finding.”²¹

The second article published in *Climate Research* by Baliunas sparked even more controversy than the first. According to Inter-Research director Kinne, Baliunas’s article “stirred storms in science, politics and the media,” and led to the resignations of three of the journal’s editors.²² He also notes that “The storms have underlined problems in the peer review process.” He indicates that this process failed in regard to the publication of Baliunas’s article:

...there was insufficient attention to the methodological basis of statements that touch hotly debated controversies and involve pronounced political and economic interests. CR should have been more careful and insisted on solid evidence and cautious formulations before publications.²³

Baliunas's articles were controversial because they challenged conventional scientific understanding of global warming without adequate evidence. As Inter-Research's own director admits, the peer review process failed in allowing Baliunas's article to be published without revision.

The bulk of Baliunas's scientific contribution to the global warming issue lies in her *Climate Research* articles, which have been summarily discredited by professional climate scientists.²⁴ *Climate Research* itself is not the definitive climate change journal. It is multidisciplinary, which means it is not subject to the same scientific rigor as journals that focus only on the science of climate, and not on the more broadly defined "Interactions of Climate with Organisms, Ecosystems, and Human Societies."²⁵ Baliunas's achievements in the science of global warming have been minimal.

Baliunas's Political Publications on Global Warming

Though Baliunas's scientific theories are dismissed in climate science circles, her ideas are embraced in the conservative political circles of Washington. Typical of her political rhetoric are articles like the one that first appeared in the *Providence Journal* on July 25, 2003: "Combating Global Warming Would Be a Waste."²⁶ She aptly criticizes the alarmist reaction to climate change, observing that many people don't understand the science behind global warming and overreact to its existence. But in the same article she undermines her credibility by citing her own research without claiming it as her own, referring to it only as a "review by a team from Harvard University" (with a link that goes to an announcement by the Harvard-Smithsonian Center for Astrophysics of her publication in *Climate Research*).²⁷ Mentioning Harvard may convince readers that the

review must be merited, *argumentum ad verecundiam*, but the actual research (the proxy study cited above) did not convince climate scientists.

Another example of Baliunas's political rhetoric is a lecture she gave at the Heritage Foundation in 2002. The title exemplifies an assuredness in tone that doesn't exist in serious scientific realms: "Warming up to the Truth: The Real Story about Climate Change."²⁸ This is the same tone of scandal and belief in the conspiracy of the liberal media that Baliunas adopts in many of her other global warming article titles, "Not So Hot," "Who Is in Denial?," "Solar Delusions," "The Real Threat to the Planet (Hint: It's not human-induced global warming)," "Alaska Is *Not* Heating Up," and "The Good News Is the Bad News is Wrong."²⁹ These titles do not appeal to scientific sensibility, but prey on a reader's suspicion that he or she has been lied to by mainstream media outlets. Baliunas implies through her titles that she will share with us secret knowledge, though she fails to mention that the knowledge she will share is based on flawed and unaccepted research.

Baliunas's approach is to present her case as the hidden truth behind global warming. She indicates that thousands of climate scientists are wrong to conclude that global warming is human-induced. In her above-mentioned Heritage Foundation lecture, she asserts that "scientific facts gathered in the past 10 years do not support the notion of catastrophic human-made warming."³⁰ But most rational climate scientists would not claim that global warming is "catastrophic." "Catastrophic" implies a certain urgency that few climate scientists would admit exists. As the IPCC concluded, the average global surface temperature has increased by less than a degree in a hundred years, and the consequences of further warming are unknown. Baliunas seems to suggest that because

observed warming hasn't been catastrophic, it shouldn't be noted, and that climate scientists are panicking over nothing. Climate scientists have concerns about global warming, but they are not panicking.

“I'd like to thank the American Petroleum Institute”

It should be noted that Baliunas's proxy climate study of the past 1000 years was sponsored, in part, by the American Petroleum Institute.³¹ While this does not prove a bias in the study's conclusions, it is interesting to note. Additionally, as stated above, *TechCentralStation.com*, where Baliunas is an “Enviro-Sci host,” is supported by ExxonMobil and General Mobil Corporation.³² The Marshall Institute does not publish its funding sources, but is generally accepted as a conservative organization by both liberals and conservatives.³³ The Heritage Foundation is widely regarded as one of the most influential conservative think tanks operating in Washington today.³⁴ From these associations, it is clear that Baliunas is politically conservative and supports a conservative agenda. While one would hope that her political ties do not influence her role as a scientist, it seems at least possible that her scientific interests in regards to global warming are intimately tied to her political activism as a think tank scholar.

Conclusion

As a Harvard trained astrophysicist, Baliunas's academic credentials are impressive. However, they do not qualify her to speak as a global warming expert. She has done almost nothing to challenge the scientific consensus that global warming is human-induced, and offered no new understanding of the science of global warming. Her

published academic articles on global warming have been met with contempt by scientists, yet her research is celebrated by her think tank employers.

Despite being dismissed by climate scientists, Sallie Baliunas's influence in Washington grows. Last summer, her expert opinion was read into the U.S. Senate's official record at a hearing on global warming.³⁵ How does an astrophysicist get invited to a senate hearing on global warming? Through the power of think tanks. This story and Altermann's study of Charles Murray serve as cautionary tales to those who doubt the influence and potential danger of think tanks.

Notes

1. Eric Altermann, *What Liberal Media?* (New York: Basic Books, 2003), 83.
2. Sallie Baliunas, "Bush right to oppose treaty," *Tech Central Station* 25 July 2001, 18 Aug. 2004 <<http://www.techcentralstation.com/072501D.html>>.
3. Sallie Baliunas and Willie Soon, "The Sun Also Warms," *George C. Marshall Institute* 24 Mar. 2000, 18 Aug. 2004 <<http://www.marshall.org/article.php?id=96>>.
4. *TechCentralStation.com* homepage, 18 Aug. 2004 <<http://techcentralstation.com/>>.
5. Charli E. Coon, "It's the Science, Stupid." *The Heritage Foundation* 8 Apr. 2003, 18 Aug. 2004 <<http://www.heritage.org/Press/Commentary/ed040803.cfm>>.
6. Chris de Freitas, "Russians say sayonara to Kyoto Protocol," *National Business Review* (New Zealand) 23 Oct. 2003, 18 Aug. 2004 <http://www.nbr.co.nz/home/column_article.asp?id=7377&cid=5&cname=Asia>.

7. Altermann 83.
8. Altermann 90.
9. Altermann 90.
10. Daniel L. Albritton et al., "Summary for Policymakers: A Report by Working Group I of the Intergovernmental Panel on Climate Change (2001): 2, IPCC Website, 18 Aug. 2004 <<http://www.ipcc.ch/pub/spm22-01.pdf>>.
11. Albritton et al. 8.
12. *ISI Web of Science*, author search under "Baliunas," 18 Aug. 2004 <<http://isi10.isiknowledge.com/portal.cgi/wos>>.
13. W. H. Soon, E. S. Posmentier, and S. L. Baliunas, "Inference of solar irradiance variability from terrestrial temperature changes, 1880-1993: An astrophysical application of the sun-climate connection," *Astrophysical Journal* 472 (1996): 891-902.
14. Michael Mann et al., "On Past Temperatures and Anomalous Late-20th Century Warmth," *Eos* 84 (2003): 256.
15. Mann et al. 257.
16. W. Soon, S. Baliunas, et al., "Modeling climatic effects of anthropogenic carbon dioxide emissions: unknowns and uncertainties," *Climate Research* 18 (2001): 259-275.
17. W. Soon and S. Baliunas, "Proxy climatic and environmental changes of the past 1000 years," *Climate Research* 23 (2003): 89-110.
18. Otto Kinne, "The scientific process: new forces attempt to enter the scene," *Climate Research* 24 (2003): 1.
19. David J. Karoly et al., "Comment on Soon et al. (2001)," *Climate Research* 24 (2003): 91-92.

20. Kinne, "Scientific process" 1.
21. Kinne, "Scientific process" 1.
22. Otto Kinne, "Climate Research: an article unleashed worldwide storms," *Climate Research* 24 (2003): 197-198.
23. Kinne, "Climate Research" 197.
24. Mann et al. 256-257.
25. *Climate Research* title page, all volumes.
26. Sallie Baliunas, "Combating Global Warming Would be a Waste," *Marshall Institute*. 25 July 2003, 18 Aug. 2004. <<http://www.marshall.org/article.php?id=149>>.
27. "20th Century Climate Not So Hot," Press Release. Harvard-Smithsonian Center for Astrophysics, 31 March 2003, 18 Aug. 2004 <<http://cfa-www.harvard.edu/press/pr0310.html>>.
28. Sallie Baliunas, "Warming Up to the Truth: The Real Story About Climate Change," Heritage Lecture 758 (2002), Heritage Foundation, 18 Aug. 2004 <<http://www.heritage.org/Research/EnergyandEnvironment/HL758.cfm>>.
29. "Archive Results" for Sallie Baliunas, *Tech Central Station*, 18 Aug. 2004 <<http://www2.techcentralstation.com/1051/searchauthor.jsp?Bioid=BIOBALIUNASSALIE>>.
30. Baliunas, "Warming Up."
31. J. R. Pegg, "GOP Senators Blame Nature for Climate Change," 3 July 2003, rpt. in Common Dreams Newscenter 18 Aug. 2004 <<http://www.commondreams.org/headlines03/0730-03.htm>>.

32. "About Us," *Tech Central Station*, 18 Aug. 2004

<<http://www.techcentralstation.com/about.html>>.

33. Rightturns.com homepage, 18 Aug. 2004

<<http://www.rightturns.com/conservweb.htm>>; Michael Glantz, "Environmental

Education: Don't Shoot the Messenger!" *Fragilecologies* 14 May 1997, 18 Aug. 2004

<http://www.fragilecologies.com/may14_97.html>.

34. Altermann 81-82.

35. Andrew C. Revkin, "Politics Reasserts Itself in the Debate Over Climate Change and Its Hazards," *The New York Times* 5 August 2003, late ed.: F2.

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