

What We Know About Climate Change

Kerry Emanuel
MIT Press, Cambridge, MA, 2007.
\$14.95 (85 pp.).
ISBN 978-0-262-05089-0

Reviewed by George Kiladis

In the past few years, the issue of climate change has been undeniably catapulted to the center stage of public awareness. The growing perception that society has influenced climate has led to an explosive increase in the number of books on climate change aimed at a popular audience, some of which could hardly be considered as objective views on the subject. As the topic has become more politicized, it is all the more refreshing to find a book such as Kerry Emanuel's *What We Know About Climate Change* that takes a levelheaded view of the science behind global climate change and what might be done about it.



The book is part of the Boston Review series by MIT Press. The series treats diverse topics ranging from nuclear disarmament to ecosystem conservation to the role of film in society. Each of these little books, which can be easily read in an hour or so, is meant to bridge information gaps created by the polarizing effects of politics, religion, and economics. Although climate change could hardly be covered comprehensively in such a short volume (to be fair, the author apparently did not

choose the title himself), Emanuel's book cuts right to the chase and attempts to summarize the extent of uncertainties that still hover over climate-change science. Using easily accessible examples, he skillfully conveys how greenhouse gases and other external influences could, over time, irrevocably affect a chaotic system, such as that responsible for Earth's climate.

Certainly no one, including Emanuel, can be a completely unbiased conveyor of the science he or she is directly involved in. As an MIT professor at the forefront of hurricane research, he wrote the standard textbook *Atmospheric Convection* (Oxford University Press, 1994); published a widely acclaimed popular book on hurricanes, *Divine Wind: The History and Science of Hurricanes* (Oxford University Press, 2005); and authored dozens of high-impact observational and theoretical papers on tropical meteorology. Although his recent research has predicted an increase in the intensity of hurricanes because of global warming, Emanuel admits that 20 years ago he was "deeply skeptical" when James Hansen, now director of NASA's Goddard Institute for Space Studies, testified before Congress that it was virtually certain that an anthropogenic global-warming signal had emerged from the background climate variability.

That Emanuel's view has evolved, along with the fact that he has not staked his entire career on the study of climate change, might perhaps be seen as his having an edge on objectivity in those matters. To me, Emanuel further sharpens that edge by carefully explaining that a healthy skepticism is crucial to the objective quest for scientific knowledge, and he admits up front to the uncertainty in the best estimates of the impact of greenhouse gases. At the heart of that uncertainty is the notion that feedbacks in the climate system, such as the potential impact of changes in cloudiness because of atmospheric warming, are still imperfectly understood. Such unknowns add wildcards to the predictions of exactly where our climate is headed in the future.

One of the valuable aspects of

Emanuel's book concerns its treatment of the politics of global warming. In discussing the two extreme camps that have arisen over the course of the debate, Emanuel contends that it is the doomsayers, mostly on the left of the political spectrum, and the contrarians, mostly on the right, who have detracted from the objectivity of the scientific discussion. Meanwhile, the contrarians fuel the public's perception that broad agreement on the scientific basis for anthropogenic climate change is far from settled. He effectively argues that the resulting media fixation on those "dogmatists" has resulted in the politicization of the issue. He then turns to the most recent series of *Climate Change 2007* reports by the Intergovernmental Panel on Climate Change (Cambridge University Press; also available at <http://www.ipcc.ch>), and in particular *The Physical Science Basis* report. In 2007 the IPCC, along with former vice president Al Gore, was awarded the Nobel Peace Prize, and its findings are considered within the research community as embodying the best scientific consensus on the topic. Again, Emanuel carefully points out the extent of the uncertainties that the IPCC itself summarized. In the end, he makes a compelling argument that the dwindling numbers of climate contrarians have been "decisively discredited."

Emanuel's job is not to advocate what can be done about human impacts on climate, although he does make more than just a passing reference to nuclear power as a means to limit greenhouse-gas production. In an afterword, two environmental policy researchers, Judith A. Layzer and William R. Moomaw, compile a concrete list of recommendations and contend that such measures could be "relatively painless." Although the addendum is a bit disconnected from the rest of the book, it does provide some interesting ideas as to what might be done to mitigate the impacts of greenhouse gases on humanity. In short, Emanuel's highly recommended book has something for everyone interested in a concise view of climate-change science and policy.

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