

Outstanding collection of pieces on climate, well balanced but with more depth on the politics than the science.

This is an outstanding collection of articles from Foreign Affairs Magazine dating from 1978 through June 2017. As one might expect given the source, the focus is much more on politics than on science.

The 1978 and 1982 articles which introduce the subject do go into the science. The theory is quite simple. Greenhouse gases, carbon dioxide, water vapor, methane and others, act as a blanket. Incoming solar radiation, with wavelengths appropriate to the 6000° Kelvin surface temperature the sun, passes unimpeded through these gases. It heats the surface of the earth. The earth surface reradiates the heat back out into space at a wavelength appropriate to the surface of the earth, about 285° Kelvin. This longer wavelength radiation excites some of the greenhouse gases, trapping some heat. The article cites the Swedish chemist Arrhenius who developed the theory.

The article says that "doubling of carbon dioxide levels in the atmosphere should produce an average temperature rise of the earth surface of approximately 3°C, with an estimated uncertainty of plus or -1.5°C." It is interesting that despite vast amounts of research in the intervening 35 years, no more accurate estimate is available. We still don't know.

The question of global warming received a great deal of interest. The Intergovernmental Panel on Climate Control (IPCC) was established under the auspices of the UN in 1988 to address the issue. The IPCC is divided into three working groups. The first is charged with assessing the science of global warming, whether or not it is real and how it works. The second is charged with assessing the potential damage, and the third is charged with proposing policy to alleviate the damage.

The IPCC works at three levels. At the working level there are thousands of scientists worldwide, mostly at research institutions. At the first level of summary technical writers collect, edit, summarize and distribute the findings of the working groups. At the top level editors prepare summaries for publication and distribution to the public.

Although the mechanics of the IPCC should be of interest to those who assess its research and recommendations, none of these articles discuss the matter whatsoever. The IPCC describes its organizational structure on its website. Since so much of this material is drawn from the IPCC, the reader owes it to him or herself to investigate how it operates and judge the extent to which it and the United Nations have their own agendas apart from the science.

The articles are quite well-chosen in terms of balance, political liberals and conservatives, climate change believers and moderate skeptics.

None of the articles talk about what climate has been in the past. Paleoclimatology is extremely relevant to this discussion. In order to understand what might happen in the future, we should understand what has happened in the past. This reviewer recommends the following books, available from Amazon:

Paleoclimate (Princeton Primers in Climate)

[[ASIN:0198798326 The Emerald Planet: How plants changed Earth's history (Oxford Landmark Science)]]

[[ASIN:022606977X How the Earth Turned Green: A Brief 3.8-Billion-Year History of Plants]]

In a nutshell, carbon dioxide has been as much as 20 times higher than it is today, at which time the temperature the earth was not much different. Although carbon dioxide does force global warming, there are many, many other factors at play. No simple formula will work.

Surprising to scientists, and disappointing to climate change advocates, even though carbon dioxide continues to rise, the temperatures are not rising apace. The models that the IPCC researchers are using have not accurately predicted actual weather through the year 2017; the predictions were higher than the observed temperatures. One factor at work may be changes in cosmic radiation, which affect the ozone layer and hence how much solar radiation the earth receives. Another factor is albedo – increased cloud cover, which reflects more heat back out into space. Another factor is vegetation. The effects of green plants are hard to model. Other factors are the Milankovitch effects - changes in the Earth's tilt, orbit, and distance from the sun. The bottom line is that scientists do not fully understand the things that affect our climate, and their predictions of the recent past have not been terribly accurate. For a

comprehensive description of the problems of climate modeling, read [[ASIN:0262518635 A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming (Infrastructures)]]

Although climate change may be an uncertainty, the depredations of fossil fuel extraction are undeniable. Mountaintop removal in coal mining destroys mountains and pollutes water supplies. The extractions of tar sands in northern Canada is extremely damaging to their environment. Shale oil extraction is much dirtier than pumping conventional oil. Moreover, nontraditional sources of oil are more expensive to exploit. Whatever the reality of global warming, mankind has a strong incentive to find an alternative to fossil fuels.

Many of these articles concern disagreements within the climate community. One article makes the point that upgrading the plant and equipment for coal-fired electric generation would reduce emissions much more, and in a shorter timeframe, than wind and solar. Environmental purists abhor such suggestions. Some authors make the commonsense observation that plants and equipment depreciate over a long time frame, and it is reasonable to expect more improvement in the out years than the near future. Others will not tolerate any delay. For a book-length discussion of the political issues involved in global warming, read [[ASIN:0521865018 Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet]], which I am pleased to find cited by authors in this collection.

In summary, this is a valuable collection of essays dealing primarily with the political considerations surrounding global warming. The table of contents is below. Summaries of each of the articles are included as comments.

Introduction-----	Gideon Rose
EARLY WARNINGS-----	
April 1978-----	Charles F. Cooper-----What Might Man-Induced Climate Change Mean? [Excerpt]
Summer 1982-----	William W. Kellogg and Robert Schware-Society, Science and Climate Change [Excerpt]
FROM RIO TO COPENHAGEN-----	
November/December 1997-----	Thomas C. Schelling-----The Cost of Combating Global Warming
March/April 1998-----	Richard N. Cooper-----Toward a Real Global Warming Treaty
May/June 1998-----	Stuart Eizenstat-----Stick with Kyoto: A Sound Start on Global Warming
May/June 2002-----	Thomas C. Schelling-----What Makes Greenhouse Sense?
NOTES TOWARD AN ANSWER-----	
May/June 2006-----	Ruth Greenspan Bell-----What to Do About Climate Change
September/October 2009-----	Michael Levi-----Copenhagens Inconvenient Truth -----How to Salvage the Climate Conference
September/October 2009-----	Joel Kurtzman-----The Low-Carbon Diet -----How the Market Can Curb Climate Change
November/December 2010-----	Michael Levi et al-----Globalizing the Energy Revolution -----How to Really Win the Clean-Energy Race
May/June 2012-----	Jeffrey Ball-----Tough Love for Renewable Energy -----Making Wind and Solar Power Affordable
July/August 2012-----	Richard K. Morse-----Cleaning Up Coal -----From Climate Culprit to Solution
September/October 2013-----	Jerry Patchell and Roger Hayter-----How Big Business Can Save the Climate -----Multinational Corporations Can Succeed Where Governments Have Failed
August 2014-----	Pete Ogden-----Beyond Copenhagen -----How Washington Can Bolster a Stronger Climate Deal
September/October 2015-----	Michael Bloomberg-----City Century -----Why Municipalities Are the Key to Fighting Climate Change
December 2015-----	Nick Mabey-----The Geopolitics of the Paris Talks -----The Web of Alliances Behind the Climate Deal
THE TRUMP ERA-----	
March 2017-----	Oren Cass-----The Problem With Climate Catastrophizing

-----The Case for Calm
April 2017-----Michael E. Mann-----Climate Catastrophe Is a Choice
-----Downplaying the Risk Is the Real Danger
July/August 2017-----Brian Deese-----Paris Isn't Burning
-----Why the Climate Agreement Will Survive Trump
June 2017-----Robert N. Stavins-----Why Trump Pulled the U.S. Out of the Paris Accord
-----And What the Consequences Will Be
June 2017-----Ted Nordhaus and Alex Trembath-----Trump's Paris Agreement Withdrawal in Context
-----The Polarization of the Climate Issue Continues