

BOOK REVIEWS

GLOBAL CLIMATE CHANGE –
INSIGHTS, IMPACTS, AND CONCERNS,
by H D Kumar.

Vitasta Publishing, New Delhi. Published
2006. ISBN 81-89766-10-4, Hard cover,
487 pp.

Available from the publisher

www.vitastapublishing.com for 1995 Indian
Rupees (US\$50).

H. D. Kumar has been a prolific author over many years. This is his 26th book, and it should find appeal among students and laymen alike on the causes and effects of climate change – and, more importantly, what we can do to help solve the problem. In recent years, most of the wide-reaching tomes such as this have been written by committees. This book provides a refreshing individual perspective, which has often been lacking. It also comes from a perspective outside Europe or America, with more of a focus on the developing world and with interactions between the developing and developed economies. There is a particular emphasis on Asia, and its increasing importance and vulnerability. As Kumar points out, 60% of the world's population is in Asia, and it sustains 75% of the world's aquaculture.

I have been a researcher and sometimes teacher of the issues discussed in this book for many years, but I still found several of Kumar's clear explanations very enlightening and useful. His lucid description of the issue of rapid climate change (~p 17) is a case in point. The book also includes useful reference material on common abbreviations and acronyms, measurement units and their conversion factors, a glossary, and an appendix of the history of the IPCC, and the Kyoto Protocol.

At nearly 500 densely packed pages, the book is rather lengthy, but this is inevitable

given its broad scope. Further, the clear division into complementary chapters, with an index, means that the reader can easily flip through from section to section focusing on their sphere of particular interest. There is some duplication between the chapters, but having this is easier than having to constantly interrupt the train of thought to cross reference other chapters. However, in places there is also quite a lot of duplication of material within chapters, or even within sections, which is less appropriate. This suggests that the book probably could have been improved by a more careful organization of material. Of course, it's easy to level this sort of criticism, but in practice it is very difficult to compartmentalize all the diverse material from such a broad subject, especially since much of the interest is in the interactions between processes.

Chapter 1 is an introductory chapter that sets the scene, broadly discussing differences between the different spatial and temporal scales of climate change. It reviews many of the broad scale features that influence weather and climate, and how humans have influenced them. The next three chapters elaborate further on those themes, and summarise our state of knowledge about the physics of climate change, its causes, and scenarios for future change. In places, the book is already slightly dated, reflecting the rapid rate of change in this sphere of research. It was written before the influential Stern Review (Stern 2006) and the 2007 IPCC Assessments (IPCC 2007). Consequently, some figures are also slightly outdated. For example, the temperature trends in Figure 1.2 extend only to 1996, which precedes the publication date by a decade.

Chapter 5 discusses the Ozone layer, and UV radiation, which have relevant linkages to climate change. But the discussion is dated in places. The implication that further ozone depletion is expected (p 234) is

probably no longer consistent with mainstream thinking because of the success of the Montreal Protocol. The “Network for the Detection of Stratospheric Change” (NDSC), which is discussed on page 232, is now known as the “Network for the Detection of Atmospheric Composition Change” (NDACC). This chapter also wanders off the subject of the interactions in Global Change in places into less relevant (though still interesting) areas, such as provision of advice on UV to the public.

My main criticism of the book is that there are rather a large number of typographical errors. For example in Chapter 6, which provides an otherwise useful description of the interactions between Oceans and Atmosphere, the word “carbon” is repeatedly mis-spelt as “corbon”. This section at least would have been greatly improved if the book had been more rigorously proof-read. This type of error inevitably raises suspicions about the accuracy of the book as a whole, but my impression is that the science is not compromised, and the extensive compendium of tabulated material is accurate. That is fortunate, because these summaries are the strength of the book. It is otherwise hard to find such a diverse wealth of such material in such a compact form. The IPCC Assessments themselves run to thousands of pages in total.

For me, the last chapters were the most interesting. Chapter 7 discussed interactions with aerosols and the interplay between climate change and global energy, both of which are highly topical issues. Different perspectives from the usual fare are provided by Chapter 8, which discusses interactions with Farming and Forestry, and Chapter 9, which discusses the situation in Kumar’s home country - India. As he notes, whatever happens in India and China will be crucial to the future evolution of climate change.

Finally, Chapter 10 discusses strategies to mitigate and manage climate change. As in other chapters, these ideas come from the perspective of the developing world – and differ somewhat from the usual doctrine.

My final criticism is that it is not always obvious whether sections are subsets of previous ones, or whether they are separate. As a consequence, some sections seemed a little disjointed from the flow, and there were occasions, when I was left wondering how the section I was reading fitted in to the bigger picture. This seemed to be more of an issue in later chapters (e.g., Chapter 7). In that regard, the book could have been improved by adhering to a strict hierarchy of numbered headings.

Although the audience for the book is international, it is curiously specific in some facets, such as detailed descriptions of the climate situation in New Zealand. This reflects the data sources - often from within NIWA - which Kumar has drawn on, and it makes the book especially useful for New Zealanders.

Despite these occasional anachronisms, a few typographical errors, and some shortcomings in organization, the book is an impressive work by a single author, and remains an useful summary of Global Climate Change, from the basic science, through to policy. I recommend the book for undergraduates of environmental research, researchers, and policymakers. It is a convenient package of consolidated references of this increasingly important issue.

References

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All these AR4 reports, and synthesis summaries, are available on-line from <http://www.ipcc.ch/>.

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Richard McKenzie
 NIWA Lauder, New Zealand
 5 November, 2007

UNSTOPPABLE GLOBAL WARMING, EVERY 1,500 YEARS. S. Fred Singer and Dennis T. Avery. Rowman and Littlefield Publishers Inc. Paperback (ISBN- 13: 978-0-7425-5124-4 | ISBN 10: 0-7425-5124-5. 2008. 278 pages. US\$ 24.95. NZ\$36. Available October 2008.

This is a “revised and updated revision” of the book (written for lay readers) of the same title published in 2007. The authors say that this new edition is “only slightly longer than the original, [but] substantially different in organization” and is dated August 2007. It contains a Foreword by Joseph Blast the CEO of the Heartland Institute, an anti-global warming think tank based in Chicago. This should warn readers of the emphasis contained in the book. That fact should not put people off reading the book, but with care. The Foreword is as controversial as the rest of the book since it includes a graph of US temperatures after a flaw was discovered in the computer programme that produces global temperatures at GISS each month. This purports to show no rapid rise in temperature over the last 30 years. But it does not include the global temperature graph published at the same time that does! Interested readers are directed to http://www.columbia.edu/~jeh1/mailings/20070816_realdeal.pdf for the discussion.

So what is the book about – apart from denying that global warming is man-made? The fundamental thesis is that the Dansgaard-Oeschger cycles of circa 1500 years “govern[s] most of the Earth’s almost constant climate fluctuations”. This is explored extensively in the four chapters that make up Part 1 of the book. The authors make much of a series of fluctuations from cold to warm and back again in the modern (post 600BC to present) period, emphasising the unnamed cold period (600 to 200BC), the Roman warming (200BC to 600AD), Dark Ages cold period (600 to 900AD), Medieval warming (900 to 1300), Little Ice Age (1300 to 1850), warming (1850 to 1940), cooling (1940 to 1970), and the current warming (1976 to present) (Chapter 3). They then amplify this by citing many more studies based on proxy evidence (such as the Vostok ice core, cave stalagmites in Ireland and New Zealand, North American pollen, deep sea sediments) to suggest that the 1500 cycle has been with us since the last Ice Age. They also discuss the 100,000 year Ice Ages and the 10,000 – 20,000 year Interglacials that they explain in terms of the Milankovich theory (Chapter 2). Criticism of this chapter is given later in the review. A discussion of warming and cooling since the Roman Warming is covered in Chapter 3 while the proxy evidence for hot/cold and dry/wet periods is to be found in Chapter 4.

The rest of the book is the alarmists or deniers bible. Part 2 is entitled ‘Predicting future climates’ and the chapter titles give a flavour of their content. ‘Shattered glass in the greenhouse’ (Chapter 5) debunks the greenhouse theory of man-made global heating using evidence of satellite temperature measurements (by Christy and Spencer) and the influence of El Niño and volcanic eruptions. However these authors modified their results by 2008. (See John Connolley at <http://mustelid.blogspot.com/2005/06/first-look-at-scs-msu-vn52.html>)

and links therein for recent graphs showing satellite measured temperature trends). This chapter is out of date in its discussion of Arctic sea ice but does bring attention to the equatorial heat vent discovered by Lindzen et al (2001). 'Fraud and deceit in selling man-made global warming' (Chapter 6) criticises the Stern Report (2006), the various IPCC Reports (including the 'hockey stick' graph in IPCC *Climate Change*, Houghton et al 2001, based on the work of Mann, 1999), and Edward Cook's work (1991) on Tasmanian tree rings. Asking "How far can we trust global climate models?" (Chapter 7) the authors discuss the effects of urbanization, the inability to parameterize clouds, the assumption that all global circulation models assume a smooth and linear climate change.

Part 3 of the book, 'Baseless fears about global warming' has chapters on sea level, species extinction, famine and drought, more violent weather and human deaths. In each case they either deny that global warming is to blame or offer alternative hypotheses, such as "human food production has increased during periods of global warming" and "history tells us that the great famines of recent history have not been caused by climate or weather problems. Primarily, they have been caused by failures of government". In the chapter on violent weather (Chapter 11) they cherry pick their sources, and in the one on human deaths (Chapter 12) they merely quote references that show warmer is better than colder from a health point of view.

Finally Part 4 'Responding to global warming' discusses the Kyoto Protocol and alternative energy. The former is suggested to be an unholy alliance between nongovernmental organizations (the Greens) and the United Nations where money is the name of the game. The latter is based on Hoffert et al (2002) but totally ignores tidal and wave power, surely one of the more likely future sources of energy.

The 'Conclusion' (Chapter 15) neatly summarizes the book without the detail of the references given in footnotes throughout the rest of the book.

So what is to be made of this book? The reviewer found the first part interesting and the arguments for a (very) approximate 1500 year quite convincing. But even here it was as if the authors were clutching at straws to make their point – they emphasise the importance of the sun's influence even though the solar cycles of 87 and 210 years have to be carefully superimposed on each other to get a 1470 year climate shift. Again they call in 'evidence' of the effects of cosmic rays but have little to say about sunspots since the cycles involved (11.2 years; the various minima, with a 150-250 year interval, identified since 1010AD; see recent Japanese phenological evidence of this in Aono and Kazui, 2008) do not help the argument. The rest of the book was disappointing and uses well known arguments and carefully orchestrated references to reject global warming as a made-made disaster. Other readers may totally disagree with this review, but I would merely end by suggesting they refer to the references and websites and not to take arguments presented at face value.

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BRIAN GILES

Hauraki, North Shore City, New Zealand and School of Geography, Geology and Environmental Sciences, University of Birmingham, England.

2 July 2008