

Review of

Cotton's and Pielke's book

Human Impacts on Weather and Climate
Cambridge University Press, 2nd edition

This is a book of two eminent meteorologists, who write about climate. They write about atmospheric physics, about processes, in quite some detail, with very many references. Not much math, but quit a few sketches and diagrams. For anybody who wants an overview what processes, which issues, which paradigms and views prevail, this book is very useful. But it is not an easy read, not a book which can be read on the train from Bonn to Hamburg. Compared to the first version of the book, this 2nd edition is less good in telling a concept, in telling its "story"; instead it is providing lots of information, of details - without being a textbook useful for the class room.

The book is written in three "parts" and an epilogue.

Part I, "The rise and fall of the science of weather modification by cloud seeding" tells about a once fancy science, which had and still has its merits, but suffered from "overselling". In a sense, this part provides the morale of the whole book - overselling scientific knowledge and scientific potentials leads eventually to a crash; not the individual scientists, who are engaged in overselling, are paying for the short term success, but the community as a whole. Obviously, this example is meant an example, or analogy, of the present "global warming" debate, which the authors consider as overheated.

Part II, "Inadvertent human impacts on regional weather and climate" is dealing with the effects of urbanization and land-use/land-cover changes. Issues addressed are irrigation, deforestation and desertification. Atmospheric processes are dealt with in great detail, but the analysis of changing long-terms statistics are not really taken into account. Disappointing is that the authors have not really dealt with the historical perspective. The impact of deforestation is an issue which was dealt since the late 18th century (e.g., Grove, R.H, 1975: *Green Imperialism. Expansion, Tropical Islands Edens and the Origins of Environmentalism 1600 - 1860*. Cambridge University Press; Stehr, N., and H. von Storch (Eds.), 2000: *Eduard Brückner - The Sources and Consequences of Climate Change and Climate Variability in Historical Times*. Kluwer Academic Publisher; Pfister, C., and D. Brändli, 1999: Rodungen im Gebirge - Überschwemmungen im Vorland: Ein Deutungsmuster macht Karriere. In R.P. Siefertle and H. Greunigener (Hrsg.) *Natur-Bilder. Wahrnehmungen von Natur*

und Umwelt in der Geschichte Campus Verlag Frankfurt/ New York, 9-18). Such ideas are thus part of our (western) cultural fabric, and certainly also influence scientific thinking.

Part III, "Human impacts of global climate" deals with the modifications of the atmospheric radiation budget due to changing concentrations of carbon dioxide, water vapor, aerosols and dust. The nuclear winter hypothesis is discussed; the knowledge about global effects of changing land surface conditions is reviewed. Again, the problem is looked at from the viewpoint of processes, while the angle of empirical evidence based on long term statistics is almost entirely disregarded. No mentioning is made of the concept of "detection" of non-natural climate change and "attribution" of most likely causes. The short subsection on the IPCC is much too short; hidden in this section is a definition of what the authors consider to be a "prediction" - their definition includes projections and scenarios, so that the two words "forecast" and "predictions" are very different terms.

In the epilogue, the authors leave their "scientific sector of competence" but discuss general societal issue of the process of science in a politically driven society. This is a thoughtful and interesting part of the book, a good read. In particular the chapter "Scientific credibility and advocacy" is interesting, albeit very short - a much deeper discussion "The honest broker" has been published by the son of the second author, Roger Pielke Jr. in 2008.

However, in the subsection "The dangers of overselling" the authors become inconsistent with their own definition of "predictions" - they claim that contemporary models are "not capable of predicting climate" - thus no realistic scenarios possible? - and they can not be included "in quantitative forecast systems" - who is claiming the latter? Certainly, such models are capable of making "credible predictions of long term climate trends and regional impacts", when the word "predictions" is understood as scenarios, i.e., "descriptions of plausible, possible, internally consistent but not necessarily probable futures". They are not capable of making credible forecasts (meaning specifying most probable states at some future time), right.

In summary - this book constitutes a good contribution to the present debate about humans' influence on climate; it brings in many different and valid view points. Bill Cotton and Roger Pielke sr. widen the horizon of understanding and options, which we see limited by those who are zealous to use scientific knowledge in shaping culturally preferred policies, who prune scientific knowledge claims according to their political utility.