CLIMATE CHANGE AND HUMAN HEALTH: RISKS AND RESPONSES.

Edited by A J McMichael, D H Campbell-Lendrum, C F Corvalán, K L Ebi, A K Githeko, J D Scheraga, and A Woodward. Geneva (Switzerland): World Health Organization. $18.00. xi + 322 p; ill.; index. ISBN: 92-4-156248-X. 2003.

This edited volume seeks to describe the context and process of global climate change, its potential impacts on human health, and how societies and governments should respond to the perceived challenges of these impacts. Prepared jointly by the World Health Organization, World Meteorological Organization, and United Nations Environment Programme, it should come as no surprise that the discussion on the context and process of global climate change is an embodiment of the Intergovernmental Panel on Climate Change's conclusions, where the authors present, as *fact,* the conventional wisdom of the United Nations that humans are harming the environment and our health via the carbon dioxide (CO_2) emitted to the air by the burning of fossil fuels, and that such harm will only intensify in the future.

How this "greenhouse gas" will impact human health is the focus of discussion throughout the middle third of the book. Here, several case studies are presented and both direct and indirect threats are discussed. Little mention, however, is made of any potential *benefits* that global warming may confer upon human health or the *positive* effects that higher atmospheric CO_2 concentrations may have on the health promoting and medicinal properties of plants. Nevertheless, the book does a fair job of acknowledging the many complexities of establishing credible causal links between global warming and human health. To this end, the authors argue for more research on the socioeconomic, demographic, and environmental influences that affect these relationships.

The final few chapters of the volume end with a call for action to reduce the potentially negative impacts of global warming on human health by decreasing our use of fossil fuels. Specifically, the authors argue that the scientific uncertainties surrounding the issue should not be used as an excuse for delay or inaction on the part of decision-makers. In doing so, however, they forget the *other* side of the "precautionary principle coin," ignoring the *positive* effects of global warming and elevated CO_2 concentrations on human health (and there are many), as well as the vastly increased water and nutrient use efficiencies of plants that accompany elevated levels of atmospheric CO_2, plus the enhanced productivities they exhibit in response to increases in the air's CO_2 content.

I, for one, want my elected officials making their decisions in light of *all* the pertinent evidence. And I want them to focus on *sound science,* not *conjecture.*

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A PRIMER OF ECOLOGICAL STATISTICS.

By Nicholas J Gotelli and Aaron M Ellison. Sunderland (Massachusetts): Sinauer Associates. $34.95 (paper). xviii + 510 p; ill.; index. ISBN: 0-87893-269-0. 2004.

Ecological statistics usually refers to the distinctive statistical methods used for ecological questions and data. Little of that information will be found in this book. Instead, Gotelli and Ellison have written a wonderful overview of statistics for ecologists. This volume contains all the material one would expect in an introductory statistical methods book, and is illustrated using ecological data: random variables and probability, descriptive statistics, comparison of means, regression, analysis of variance (ANOVA), and contingency tables.

This volume also contains a lot more. Most chapters end with short discussions of advanced methods. For example, the chapter on regression includes brief treatments of robust regression, quantile regression, path analysis, and model selection, with sources for further information. There are also chapter-length discussions of study design, data management, and an introduction to multivariate statistics, including ordination. Throughout the book, there are wonderful footnotes with historical notes and biographies.

The presentation emphasizes concepts, not equations or statistical theory. The advice is generally sound. The discussion of experimental designs and ANOVA seems a bit dated, emphasizing formulae for calculating sums of squares in balanced designs. Unequal sample sizes are not a problem with modern computing. And a missing observation in a randomized block design does not require researchers to ignore the remainder of the block.

There is a strong emphasis on Bayesian inference. An introductory chapter compares Bayesian and frequentist inference. Unfortunately, the comparison focuses on hypothesis testing, which raises tricky issues for a Bayesian inference. The example appears to be the Bayesian analog of statistical power, which is not comparable to the frequentist p-value. Most of the remainder of the book presents Bayesian alternatives for traditional methods.

This volume provides a wonderful review of traditional statistical methods. It is also an introduction to new statistical ideas. I highly recommend it.

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