describes one example of the agriculture of the future, since by definition, unsustainable systems will fall by the wayside. What will survive will be resource efficient, productive, profitable, environmentally sound, well integrated, thought intensive farming systems, such as the one described in this book. – RHONDA R. JANKE, Department of Agronomy, Throckmorton Hall, Kansas State University, Manhattan, KS 66506 (rjanke@oz.oznet.ksu.edu).

Responding to Global Warming: The Technology, Economics, and Politics of Sustainable Energy

Peter Read, Zed Books Ltd, 165 First Avenue, Atlantic Highlands, NJ 07716. 1994. 304 p. £36.95/$59.95 hardback; £14.95/$25.00 paperback.

Global warming is a much debated scientific topic, with potentially profound implications if the arguments supporting the growth of global warming are true. In response to this issue, Peter Read has written a comprehensive and persuasive response.

The essence of this work is that regardless of whether global warming is a reality, efforts to increase oxygen levels in the earth’s atmosphere and slow down depletion of the ozone layer are worthy of our serious consideration. Within that context, the author considers political, economic, social, and natural complexities that maintain the general acceptance of current technologies, and argues how these concerns can be overcome to achieve an alternative technology beneficial to both industry and the global environment.

The alternative suggested is to return to a sustainable fuels technology through reforestation, sustained-yield management, and development of alternative biomass power plants. The author acknowledges the difficulties involved in such a venture arising from political and market forces. Still, he argues strongly that the economic justification and engineering capability are pronounced enough that decision makers in the public and private sectors should seriously consider this proposal as an ecologically sound alternative to current practices.

The importance of this work goes far beyond a discussion of global warming. Through his analysis, the author provides a thorough, accurate study of the political and scientific state of affairs that has created current ecological conditions viewed as bordering on crisis. More importantly, he argues that instead of fighting market forces to effect positive change, those seeking change should work to show the viability of solutions within the existing system.

Responding to Global Warming is a rare work that effectively advocates a position without detracting from its academic soundness. Though exhibiting biases, Mr. Read allows the reader to draw independent conclusions based on the evidence presented.

A concern with the book is a tendency for the author to use language that is at times difficult for the common reader to understand. Still, the ideas flow fairly well from one chapter to another, leading to a logical conclusion.

For professors and students of engineering, environmental economics, environmental politics, and political processes, this book is must reading. In addition, political and business leaders should find it of interest. Finally, the suggested further reading and reference sections at the back are good research tools for papers and theses, making this work a valuable addition to libraries. – M.D. MOORE, Apache County Development, P.O. Box 151, St. Johns, AZ 85936-0238.

Handbook of Vadose Zone Characterization and Monitoring


This book provides a broad coverage of the title subject, drawing on contributions from many acknowledged experts in the field of vadose zone hydrology and agricultural soil physics. The book’s primary strength lies in its breadth, covering topics ranging from philosophical and regulatory issues related to vadose zone hydrology, to physical and biogeochemical processes affecting fate and transport, to modeling, to indirect and direct monitoring methods.

The format of the book consists of a series of “stand-alone” chapters, which are loosely organized into related parts (36 chapters in 10 parts). Several of the chapters are slightly modified and updated versions of articles from refereed journals that have been previously published in recent years. The sequence of parts begins with the most general topics followed by progressively more focused chapters. Part 1, “Philosophical and Regulatory Considerations,” contains two chapters that solidly establish the practical motivation for vadose zone monitoring and characterization. Parts 2 through 5 cover generic foundational topics (e.g., “Transport and Storage of Water” and “Solutes, Fate and Transport Processes”); an understanding of most of these topics is required for one to undertake a coherent vadose zone monitoring and characterization project.

Part 6 contains two chapters related to vadose zone modeling, with the first by Fogg, Nielsen, and Shibberu focusing more on modeling assumptions, conceptual models, and identifying a variety of modeling approaches, and the second by Kramer and Cullen, which provides a detailed, current listing of widely available computer codes that implement flow and transport mathematical models. Parts 7 through 10 provide 19 chapters of handbook-type discussions of a wide array of vadose zone monitoring and measurement technologies and approaches. Complementing chapters on widely applied technologies with a long history of vadose zone application (such as tensiometers and neutron probes) are chapters that introduce and discuss more recent innovations (such as fiberglass wick samplers and time domain reflectometry).

In addition to the extremely broad coverage, another strength in the book can be found in the “case history” chapters, which present actual field situations and data, highlighting for insightful readers the ambiguities and difficulties typically associated with real-world monitoring situations. The book’s primary weakness lies in its uneven coverage of the subjects and frequent overlap between chapters, which is probably inevitable in a manuscript of 36 chapters written by nearly 50 authors. Another minor negative aspect is the book’s occasional lapses into overly broad generalizations, which can be somewhat misleading when discussing topics such as understanding the impact of the geologic framework on fluid storage and transmission processes, and monitoring of perched groundwater in arid lands. While not suitable for use as the primary textbook for an introductory vadose zone hydrology course, the book is a valuable reference of the current state-of-the art in vadose zone monitoring and characterization. As such, I would certainly recommend it for anyone whose practice involves vadose zone hydrology. – JIM McCORD, Geohydrology Department, Sandia National Laboratories, Albuquerque, NM 87185-1324.