Because improvements in our current knowledge and understanding of what determines and influences climate also affect how we interpret measurements made in the past.

A compelling aspect of A Vast Machine is Edwards’ careful history of the development of weather observations and prediction in conjunction with the simultaneous and often intertwined evolution of climate monitoring and modeling. Weather data networks and numerical weather prediction models have grown rapidly in response to immediate societal needs and interests, evolving into ubiquitous technologies and well-oiled systems for delivering useful information to a wide range of users. Climate data networks and climate models share many similar components and approaches, but require a shift in perspective in analyzing and using data and model predictions. For example, long time series of climate data need continual reassessment and reanalysis because improvements in our current knowledge and understanding of what determines and influences climate also affect how we interpret measurements made in the past.

For anyone interested in global warming or more generally in climate or weather issues, A Vast Machine is well worth a careful read. It provides an unusually broad and long-term view of the development of climate science and associated climate data, models, and information infrastructure, supplemented by useful figures and very detailed notes and references. Edwards begins with helpful guidance on what chapters might be of strongest interest to some readers or too technical for others. For those more generally interested in science, science and technology policy, and data and information management issues, he offers a sprinkling of comparisons with analogous issues and pointers to relevant literature.

As someone who has been closely involved for several decades in many of the research, data, and assessment activities and institutions documented in this volume, I found it indeed a rare and unexpected opportunity to learn so much about how these endeavors have fit into a vast and vibrant scientific enterprise that is of critical importance to the sustainability of our planet. The volume is also a testament to the vision and breadth of interests of the late Stephen Schneider of Stanford University, who helped Edwards with many aspects of his research (and who was a key mentor for this reviewer as well).

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Announcements | New Books

Climate Change and Policy
Gabriele Grummlerberger, Johann Feichter, eds.
New York:Springer, 2011. 240 pp. ISBN: 978-3-642-17699-9, $159

Coping with Global Environmental Change, Disasters and Security
H.G. Brass, U. Osvald Spring, C. Mejean, J. Gris, P. Kamers-Mhoto, B. Owona, P. Duany, J. Birkenma, eds.
New York:Springer, 2011. 1,815 pp. ISBN: 978-3-642-17775-0, $399

Dealing with Contaminated Sites
Frank A. Swartjes, ed.
New York:Springer, 2011. 1,114 pp. ISBN: 978-90-481-9756-9, $279

Environmental Cardiology: Pollution and Heart Disease
Arnab Bhattachar, ed.
New York:Springer, 2011. 590 pp. ISBN: 978-1-4419-9408-0, $159.95

Global Change: Mankind–Marine Environment Interactions
H.J. Caccioli, I. Dekypere, M. Giraudo, G. Sarna, eds.
New York:Springer, 2011. 450 pp. ISBN: 978-90-481-8629-7, $179

Handbook of Renewable Energy Technology
Ahmed F. Zohair, Ramesh C. Bansal, eds.
Hackensack, NJ:World Scientific, 2011. 876 pp. ISBN: 978-981-2848-10-6, $270

Human Population: Its Influences on Biological Diversity
Richard P. Cervantes, Larry J. Gooren, eds.
New York:Springer, 2011. 242 pp. ISBN: 978-3-642-16706-5, $129

Implementing the New Biology: Decadal Challenges Linking Food, Energy, and the Environment
Paula Tarnopolsk Whisn, Adam P. Fagen, Jo L. Huskau, Frances E. Sharples, eds.
Washington, DC:National Academies Press, 2010. 52 pp. ISBN: 978-0-309-16194-7, $19

In Search of Biohappiness: Biodiversity, Food and Health, and Livelihood Security
M.C. Sumaithan
Hackensack, NJ:World Scientific, 2011. 200 pp. ISBN: 978-981-4329-32-3, $88

Intraseasonal Variability in the Atmosphere–Ocean Climate System, 2nd ed.
William K.-M. Lau, Duane E. Walser, New York:Springer, 2011. 320 pp. ISBN: 978-3-642-13913-0, $179

Materials for Sustainable Energy
Vincent Deugs, ed.
Hackensack, NJ:World Scientific, 2010. 360 pp. ISBN: 978-981-4317-64-1, $148

Pathways for Getting to Better Water Quality: The Citizen Effect
Leo. Wright Morrison, Susan S. Bruun, eds.
New York:Springer, 2011. 273 pp. ISBN: 978-1-4419-7281-1, $129

Statistics for Earth and Environmental Scientists
John Schmeemeyer, Larry Drew Honsoan, NJ:John Wiley & Sons, Inc., 2011. 407 pp. ISBN: 978-0-470-58469-5, $110

The Economic, Social and Political Elements of Climate Change
Walter Leid Lillo, ed.
New York:Springer, 2011. 875 pp. ISBN: 978-3-642-14775-3, $279

The End of Energy: The Unmaking of America’s Environment, Security, and Independence
Michael Greve
Cambridge, MA:MIT Press, 2011. 384 pp. ISBN: 978-0-262-01567-7, $29.95

The Energy Problem
Richard S. Water, Joseph Powers
Hackensack, NJ:World Scientific, 2011. 210 pp. ISBN: 978-981-4340-31-1, $38

Understanding Knowledge as a Commons: From Theory to Practice
Charlotte Heas, Elmer Ostrom
Cambridge, MA:MIT Press, 2011. 381 pp. ISBN: 978-0-262-51603-7, $20

Urban Airborne Particulate Matter: Origin, Chemistry, Fate and Health Impacts
Fabi Zerein, Claire L. S. Wurman, eds.
New York:Springer, 2011. 656 pp. ISBN: 978-3-642-12277-4, $279