



Kevin E Trenberth has a new book, *“The changing flow of energy through the climate system”*, Cambridge University Press, 336 pages, available for US \$36 paperback including a 20% discount.

FROM CUP:

Kevin E. Trenberth emphasizes the fundamental role of energy flows in the climate system and anthropogenic climate change. The distribution of heat, or more generally, energy, is the main determinant of weather patterns in the atmosphere and their impacts. The topics addressed cover many facets of climate and the climate crisis. There is a short summary of each chapter up front. These include the diurnal cycle; the seasons; energy differences between the continents and the oceans, the poles and the tropics; interannual variability such as Niño; natural decadal variability; and ice ages. Human-induced climate change rides on and interacts with all of these natural phenomena, and the result is an unevenly warming planet and changing weather extremes. The book emphasizes the need to not only slow or stop climate change, but also to better prepare for it and build resilience. Students, researchers, and professionals from a wide range of backgrounds will benefit from this deeper understanding of climate change.

1. Earth and Climate System; 2. Earth's Energy Imbalance and Climate Change; 3. Earth's Energy Balance;
 4. The Sun-Earth System; 5. Observations of Temperature, Moisture, Precipitation and Radiation;
 6. The Climate System; 7. The Weather Machine; 8. The Dynamic Ocean;
 9. Poleward Heat Transports by the Atmosphere and Ocean; 10. The Changing Hydrological Cycle;
 11. Teleconnections and Patterns of Variability; 12. El Niño; 13. Feedbacks and Climate Sensitivity;
 14. Earth's Energy Imbalance Estimates; 15. Attribution and the Hiatus; 16. Prediction and Projection;
 17. Emissions and Information; 18. Climate Change and Environmental Issues;
- References and further reading; Bibliography; Glossary; Acronyms; Index.

There is a foreword, by former **Vice President Al Gore**.

Endorsements

Kevin Trenberth is one of the world's premier climate scientists ... He has an extraordinary ability to take the complicated scientific dynamics of global warming and communicate what's happening in a clear and compelling way ... I highly value the way he not only informs, but also motivates action ... an essential read to understand the underlying scientific dynamics of the climate crisis.

Former Vice President Al Gore

'Authoritative, rigorous, well written, and nicely illustrated, Trenberth's book is a welcome addition to the non-specialist literature on climate change. It should be suitable as a possible textbook for graduate courses in climate change and climate dynamics, and appealing to the reader willing to invest the time and effort required to understand the scientific principles that determine how the climate system will respond to the buildup of greenhouse gases in the atmosphere.'

John Michael Wallace, University of Washington

'Nobody has contributed more to our understanding of climate change than Kevin Trenberth. In this book, Trenberth uses the concept of energy flows to explain, in accessible terms, how Earth's climate system operates and how it's being profoundly impacted by human-generated carbon emissions. Read this book to be informed about the basic science underlying the defining challenge of our time.'

Michael E. Mann, Distinguished Professor, Penn State University and author of *The New Climate War: The Fight to Take Back Our Planet*

'I read Kevin's book in August 2021 while visiting family in Greece, away from my home in California, at a time when both regions were devastated by fires following persistent drought and the worse heat waves in decades. Kevin's book, together with the release of the recent IPCC report and the "world map in flames", make it clear that we have reached a tipping point and there is no time to waste. We need to stop the climate crisis *now*, and until we manage to "stabilize the energy flow of our climate system" again, as Kevin clearly puts it, we need to build resilience for the disasters ahead. The easy-to-read style of Kevin's book is a welcome and very timely addition for scientists and non-scientists alike. My thanks go to him for his excellent and scholarly contributions over the many years of his career, for his commitment to the scientific evidence of climate change, and for continuously reminding us that it is only by the people of the world working together that we can address this crisis and save humanity on our "Spaceship Earth".

Efi Foufoula-Georgiou, University of California, Irvine

'Trenberth is the world's greatest master-gatherer of climate data; he orders and translates it into beautifully rendered illustrations that can be followed by everyone. If you do not understand a figure, just go to his accompanying prose and you will. He understands every contour of the data. He teaches us through the lens of energetic reservoirs and fluxes among the various climate system components and how they are forced to move about, grow or shrink. What a treat it is. The wonderfully tinted illustrations in the book are taken and modified from the literature, and many have originated from his own work. The images have been shaped and perfected by decades of lectures he has given to all sorts and levels of audiences. The colorful illustrations are the bones of the book, but the flesh of the prose clearly explains just about every aspect under the great umbrella of climate science.'

Gerald R. North, Texas A&M University

'Understanding the changes occurring in the Earth's energy budget underlies understanding of our changing climate. This excellent book builds on the many highly acknowledged research papers Kevin has written on this and related topics of the physics associated with our climate system to explain the depths of the science, while doing it in a way that is readable by the non-expert. And yet, there is much in it of value to all of us, including the experienced scientist.'

Donald J. Wuebbles, University of Illinois

‘Trenberth's *The Changing Flow of Energy through the Climate System* is an important new textbook on global warming. It is highly accessible and includes a wide range of informative color figures. The introductory chapters give a broad overview of the Earth's climate system that will complement other textbooks on the subject. The chapters on flows of energy go beyond many other publications and provide a deeper understanding of topics such as patterns of natural variability. It is an up-to-date and timely publication, coinciding as it does with the latest Assessment Report from the IPCC’.

Matt Smith, University of Worcester

‘Kevin Trenberth has been the leader for many years in research on aspects of energy in the climate system based on observational data. He therefore has the perfect background to write a book on climate and climate change based on this perspective. The result is an illuminating discussion that should be of wide appeal.’

Sir Brian Hoskins, The Grantham Institute for Climate Change, Imperial College London

‘Kevin Trenberth is not only one of the world’s foremost scholars on climate change, but also among the best at communicating this science. Kevin doesn’t just take the reader through the science, but also does a masterful job at laying the *foundation* upon which the climate change story is built. This is a perfect book for atmospheric and climate science students, as well as for scientifically literate members of the general public who want a true dive into the fundamentals of climate change.’

Paul Gross, CCM, CBM; WDIV-TV Meteorologist; Fellow, American Meteorological Society

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On Amazon, you can “look inside” and read the first Chapter

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