superfluous to the needs of the system.

Levin concludes that each model is, to some extent, correct. Thus, whereas ecosystem processes may reflect the activities of a few dominant species, more diverse assemblages may contain the most productive species. However, Levin emphasizes that system resilience is evolutionarily reinforced in complex food webs through multiple interactions and feedback loops. The importance of dominant species for system functioning may therefore critically depend on interactions with their apparently less influential neighbours. Indeed, a quarter of a century ago ecologist Daniel Janzen said that the ultimate extinction is the extinction of ecological interactions. There is a subtle lesson here for ecologists.

Throughout the book, Levin translates complex ecological jargon into more accessible language by invoking the use of colloquial models and analogies. There are some memorable gems in these pages: the assembly of ecological systems is played out in his game of "Ecological Scrabble"; cheese mould is used as a metaphor for the spread of invasive species; Levin's desk is actually a self-organized ecological system, complete with dominant species (ballpoint pens) and less important organisms (paperweights). However, Levin does not shy away from some of the recent advances in current ecological theory. Working from an area close to his heart, he uses innovative models to describe various ecosystem properties. Two of the best examples are Per Bak's sandpiles to elucidate systems in self-organized criticality; and interactive particulate systems models to define assembly rules, which have also been used elsewhere to illustrate a range of diverse phenomena.

There are many take-home messages in *Fragile Dominion*. Clearly, since we know so little about the function of the ecological systems underpinning our own existence, it should be patently obvious that tinkering with them poses substantial risks. We know enough about natural systems to realize that our continued assault brings them closer to the edge. Levin argues that we must view the biosphere as an integrated complex system, with the working components being the species that comprise it. Only in this way can we truly appreciate how the system works and ensure that it does not fail. I recommend this book highly; it contains many fascinating insights into the workings of nature's machinery that will enlighten the non-expert while providing a perspective for scientists across a range of disciplines. Always thought-provoking, sometimes disturbing, yet never pessimistic, *Fragile Dominion* deserves to be widely read. ■

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Turned out nice again

The Change in the Weather: People, Weather, and the Science of Climate
by William K. Stevens
Delacorte: 2000. 432 pp. $24.95

Mojib Latif

The serious weather extremes observed throughout the world in recent years have generated a lively debate about anthropogenic (human-induced) climate change. The problem has reached high priority on the agenda of international politics: in 1997, 84 countries signed an agreement known as the Kyoto Protocol, aiming to reduce emissions of heat-trapping trace gases into the atmosphere. Yet one school of thought claims that there's nothing to worry about. Who is most likely to be right, and why?

In this timely book, William K. Stevens reviews not only the findings that led to the Kyoto Protocol, but also the entire science of climate research, from its infancy when Lewis Fry Richardson developed the methods on which modern weather and climate models are based, to the present-day state of the art. Numerous interviews with climate scientists and others involved in the debate add to the clearly explained scientific findings to bring the book to life — one can almost feel the temperature rising as one reads.

Stevens doesn't hide his belief in the mainstream view — that anthropogenic climate change is a major issue and that its effects can already be detected with relatively high probability. However, he devotes some time to reviewing the views of the "contrarians" who claim that climate-change models are seriously flawed and therefore that the projections are no cause for concern.

Stevens is rather optimistic about the degree to which one can detect the impacts of global warming on weather extremes, sometimes seeming unable to distinguish between research results and scientific speculation. Another weakness is that his introduction takes in the history of the Earth, the development of its climate and the evolution of the human race — an interesting outline, but too long in this context and distracting from the climate-change debate.

The rest of this very well-written and accurate book, however, addresses the problem comprehensively, including its social and economic aspects. Stevens has an excellent understanding of the processes within the climate system and succeeds in communicating this knowledge in an understandable, easy-to-read style. He explains clearly the concepts and physical principles on which climate research is based, while highlighting the uncertainties in model projections of the future.

Overall, *The Change in the Weather* is a useful contribution to the climate-change debate, ideal for students wishing to find out more about the field of climate research in general and anthropogenic climate change in particular. A well-balanced assessment of the debate, this book provides a solid basis for discussion and can be recommended to readers outside the field, with or without a scientific background. ■

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