to millennia. Thus, we are not asked to rely on predictive views to study the interaction between people and environment, but we are presented with an intelligent history of this interaction. The more speculative study of the possible consequences of greenhouse-gas-induced climate change is discussed in the last chapter, after the past and present have been carefully examined.

After an introductory chapter, changes in the physical climate system are discussed in three chapters. First, an overview of the methodology of reconstructing past climates is presented, followed by discussions of patterns and causes of climate change, and the consequences of this change for the oceans, cryosphere, and biota. The emphasis is on the most recent 20,000 years, the realm of human activity. The next two chapters deal with human components of the system — the impact of environmental change on people and the historical impact of people on the environment. A separate chapter is devoted to erosion, followed by a short chapter on the cultural history of conservation. The final chapter summarizes some contemporary climate change issues, mostly greenhouse warming with some mention of ozone depletion and acid rain.

Despite a certain disappointment in the lack of depth in the treatment of some topics, I appreciate the breadth of the volume and the connections that it makes. Besides being of general interest to the wide-ranging environmental community, Late Quaternary Environmental Change should be of interest to “disciplinary” scientists struggling for broader views in their research or undergraduate teaching. The text is straightforward and readable, the figures are helpful and clear, and the references are exhaustive. — KERRY H. COOK, Dep. of Soil, Crop, and Atmospheric Sciences, Cornell University, Ithaca, NY 14853.

Nitrogen Isotope Techniques


The processes of the nitrogen cycle in the biosphere have been the subject of intensive study for many years, because of their profound importance for the functioning of terrestrial and aquatic ecosystems. The use of tracer techniques to help unravel some of the complexities of nitrogen transformations is well-established, and is likely to become ever more widespread as the necessary instrumentation becomes more affordable and more user-friendly.

This increased availability of the necessary technology for isotopic studies increases the need for detailed guides to the techniques and for information on their applications. This book is an important contribution to the fulfillment of these needs.

Nitrogen isotope techniques are applied to a variety of problems in environmental science, including the study of nitrogen fixation, mineralization/assimilation, denitrification, and denitrification. The book includes separate chapters dealing, respectively, with plant systems and flooded soils/sediments and soils. Unfortunately, however, denitrification is covered in only one chapter. In general, these chapters provide useful information and experimental procedures and essential calculations that should prove invaluable to researchers entering this field for the first time — and provide a welcome standard of practice against which “old hands” can measure their work.

The book will be of use primarily to researchers, as well as to those teaching, and taking, advanced courses in analytical methods and use of isotopes. — Department of Soil Science, SAC, West Mains Road, Edinburgh EH9 3JG, UK.

The 1993 Information Please Enviro- Almanac

Compiled by the World Resources Institute (editor-in-chief), Houghton Mifflin Company, One Beacon St., Boston, MA 02108, 656 p. $10.95 paper, $21.95 cloth.

This is the second annual issue of the Information Please Enviro-Almanac, which is promoted as a “sourcebook for environmentally conscious.” About one-third of the book consists of generally informative articles on popular environmental issues, which try to define critical issues. Attention is given to air pollution, energy conservation, waste management, forest, wetlands, wildlife, global warming, ozone depletion, etc. There is not much of direct interest to soil scientists in these articles. The remainder consists of a statistical comparison of population, land use, energy and industry between countries worldwide, from Canada, and states in the USA. This is useful for those teaching at the graduate level, background for activists wishing to change environmental practices and/or government policies.

Nearly all of the statistical information is based on official government or United Nations publications, although the data are for 1990 or 1991, although some years’ earlier data were used. Fiscal year 1988 expenditures on environment and natural resources by state is for the 50 states and the District of Columbia. The only exception is Alaska, which is omitted because of the lack of adequate data. A more complete analysis of the data is provided in Environmental Expenditures in the United States, 1986-1987, by the US Geographical Survey (GPO, 1988). National and state per capita environmental expenditures are: Alaska, $209; California, $141; New Hampshire, $138; New Jersey, $132; and Texas, $125. The next 25 states are not listed here. This information is intended to be a guide to the expenditures on environment and natural resources by state. It is not an exhaustive list, but the data are as accurate as possible.