
Highlights in Environmental Research is a collection of professional inaugural lectures presented at Imperial College and is Volume 3 of the Series on Environmental Science and Management. There are six chapters, written by six different authors, covering a wide range of topics: (1) a rainbow planet—studies of the Earth’s climate from space; (2) water in a changing world; (3) humanity, minerals, and the environment; (4) rock, soil, and health—human interference with the geochemical environment; (5) virtual ecology; and (6) pests, pesticides, and pest management. Likewise, the contributors represent an array of diversified fields, including physics, hydrology, mineralogy, geology, oceanography, and entomology. As the book’s title suggests, all lectures center on environmental issues and together they depict a clear picture of the truly interdisciplinary nature of environmental research.

Chapter 1, by John Harries, gives an overview of the Earth’s climate system and how it can by studied using techniques of observations from space. Specific examples are presented on monitoring and characterizing ozone in the atmosphere and the greenhouse effect, topics that the author has been involved in at Imperial College. Chapter 2, by Howard Wheater, begins with a brief introduction to the field of hydrology and historical development of applied hydrology, followed by a long list of topics that are relevant to environmental research. These topics range from groundwater to surface water and from pore scale to global scale, showing the increasing demands that environmental management problems are placing on the hydrological sciences. The chapter also touches on topics of crisis and conflicts in dealing with allocation of water resources and the importance of sustainable development. Chapter 3, by John Monhemius, talks about the close linkages between the evolution of humanity and the use of minerals and metals, the impacts of mining on the environment, and the challenges we face today in dealing with this impact. A very brief description of the relevant research conducted at Imperial College and in the United Kingdom is given at the end of this chapter.

Chapter 4, written by Iain Thornton, addresses how geochemistry has and will continue to influence plant, animal, and human health; ecological and human communities; and how humans will continue to change the chemistry of our complex geochemical environment. Most of this chapter is a review of the author’s 25-yr research at Imperial College. Topics include geochemical mapping, geochemistry and pollution, geochemistry of the urban environment, geochemistry and wildlife nutrition, and geochemistry and endemic diseases in humans. Chapter 5, by John Woods, is more specific in its content than the previous chapters and focuses on the description of new technology called a virtual ecosystem, which is a computer model that comprises a set of equations and parameters that describe the basic processes of marine physics, chemistry, and biology. The author demonstrates the application of the model to a number of classic phenomena and outlines the potential to apply the model to a wide range of problems in the ocean. In Chapter 6, by Graham Mathews, an example is used to illustrate how a pest management program can be developed. The example focuses on cotton and covers topics on cotton insect pests, various application technologies used in South Africa, and integrated pest management.

The chapters vary greatly in style and length, as well as the breadth and depth of the topics covered. The book is relatively short and easy to read. As an environmental scientist, I enjoyed learning about the research activities that are going on in other disciplines related to the highly interdisciplinary field of environmental research. I believe other scientists and policy makers may also find it interesting reading. Several chapters may be useful as a good introduction to undergraduate students who are interested in pursuing a career in environmental fields and to graduate students as they begin to develop their research projects.

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