

## *Preface*

In the past two decades, problems of the environment have come to attract a great deal of public attention. What in the past was taken for granted is now seen to be at risk; the clean air and water, the forests and grasslands that were commonplace to, and expected by, our parents and grandparents may become curiosities or legends to our children and grandchildren. Environmental problems are the subject of discussion in the press and other public forums in most parts of the world.

Many of these growing environmental problems are seen as transcending national boundaries and responsibilities; there are problems where changes within one country might affect many others, and others where action within a single country is unlikely to be sufficiently effective. One result of the growing public awareness of environmental problems and of their international character was the Stockholm Conference on the Human Environment convened by the United Nations, which established the United Nations Environment Programme (UNEP), with its responsibilities for coordinating and initiating intergovernmental action in the environmental field. Another consequence of the enhanced world-wide awareness of these problems was the establishment by the International Council of Scientific Unions (ICSU) of a Scientific Committee on Problems of the Environment (SCOPE) to advance knowledge of the influence of man on his environment and of the effects of the environmental changes upon man, and to serve as a non-governmental, interdisciplinary, and international council of scientists and a source of advice with respect to environmental problems. SCOPE was set up in 1969. Its first General Assembly was held in Canberra, Australia, in 1971, and was addressed by Maurice Strong (who was soon to become the first Director-General of UNEP); a second General Assembly was held in Kiel, Federal Republic of Germany, in 1973 and a third one in Paris, France, in 1976. By that time, scientists in thirty countries had become involved.

At the second General Assembly a programme of work to be undertaken during the following two to three years was agreed upon. One of the important elements of the SCOPE programme has been the study of simulation modelling as a tool for environmental management. The working group set up at the Second General Assembly to manage this project decided that there was need for an international review of simulation modelling of environmental problems, written both for environmental scientists and for those wishing to apply science to the solution of environmental problems. The result is the present publication.

Preparation of this report was undertaken by a group of scientists from nine countries who attended a Workshop meeting at the Holcomb Research Institute, Butler University, in Indianapolis. Initial drafts from the various chapters were prepared by four sub-groups and were then subjected to discussion by the Workshop as a whole, followed by re-writing. The draft prepared at that time was repeatedly revised, with the help of some additional scientists not able to be present

at the Workshop, and edited into its present shape by the undersigned with the assistance of Alison Hine. We can, however, take no personal credit for it, and the report must be regarded as the collective effort of all those named in the list which follows this Preface.

The Workshop meeting would not have been able to progress so fast or so far without much in the way of preparatory work. All those involved would like to express their particular appreciation to the U.S. SCOPE Environmental Simulation Modeling Advisory Committee under the chairmanship of Brian W. Mar, who prepared a report on environmental simulation modelling in the United States\* with staff support from the Holcomb Research Institute. Copies of this report, in draft form, were made available to all Workshop participants, and provided valuable background. Special thanks also go to those of our colleagues who prepared chapter drafts in advance of the Workshop – D. R. Miller, R. E. Munn and Y. Shimazu.

In conclusion, we would like to express our appreciation, both in a personal capacity, and as Co-Chairmen of the SCOPE Commission on Simulation Modelling and editors of this report, for the help and support freely afforded, during, before, and after the Workshop, by the Holcomb Research Institute, by its Director, Thomas F. Malone, its Assistant Director, David Holtz, and its staff. Without such help, this project would hardly have been conceived, let alone born.

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\*Holcomb Research Institute. 1976. *Environmental Modeling and Decision Making: The United States Experience*. Praeger: New York.