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edited by Carl H. Oppenheimer, Dorothy Oppenheimer, and William B. Brogden

ENVIRONMENTAL DATA MANAGEMENT

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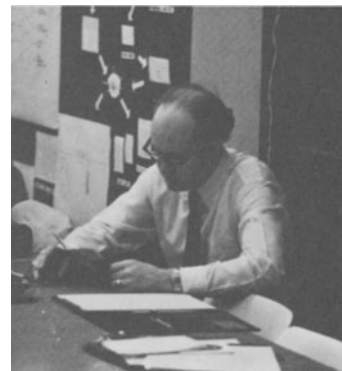
PREFACE

Throughout the world a staggering amount of resources have been used to obtain billions of environmental data points. Some, such as meteorological data, have been organized for weather map display where many thousands of data points are synthesized in one compressed map. Most environmental data, however, are still widely scattered and generally not used for a systems approach, but only for the purpose for which they were originally taken. These data are contained in relatively small computer programs, research files, government and industrial reports, etc.

This Conference was called to bring together some of the world's leaders from research centers and government agencies, and others concerned with environmental data management. The purpose of the Conference was to organize discussion on the scope of world environmental data, its present form and documentation, and whether a systematic approach to a total system is feasible now or in the future. This same subject permeated indirectly the Stockholm Conference on the environment, where, although no single recommendation came forth suggesting a consolidated environmental data pool, bank or network, each recommendation indicated that substantial environmental data needed to be obtained or needed to be pooled and analyzed from existing data sources.

I should like to point out that each participant was asked to represent himself only, regardless of his affiliation. The free intercourse of the program was encouraged to obtain a consensus of scientific thought that may provide the environmental data leadership of the future. The strength of the Conference rests on the unequivocal response, free from constraints, either political or otherwise. Therefore, we ask the reader's indulgence to accept the philosophy that the success of this Conference lies in its written contributions in the same free and easy intercourse as taken verbatim during the proceedings.

Thirty-four participants representing various types of computer programs and related interests attended the Conference. The NATO representative, the Executive Officer of the Special Program Panel on Eco-Sciences, was Dr. Andreas Rannestad, a solid state physicist from Norway.



Dr. Andreas Rannestad

The organizers of the Conference, Drs. Carl H. Oppenheimer and William B. Brodgen, are marine ecologists with the University of Texas Marine Science Institute at Port Aransas, Texas, who are currently working on environmental data systems for coastal zone planning.



Dr. Carl H. Oppenheimer



Dr. William B. Brodgen (left)

Two groups currently having the capability of interchanging oceanographic data bases are Dr. Thomas Austin, Director, Environmental Data Service, National Oceanic & Atmospheric Administration, USA, and Mr. Dieter Kohnke, Director of Deutsches Ozeanographisches Datenzentrum, Deutsches Hydrographisches Institut, Germany, who are responsible for the United States' and Germany's Oceanographic Data Centers, respectively.



Dr. Thomas Austin



Mr. Dieter Kohnke

The following photographs of Conference participants were taken during the Conference.



(Left to Right) Dr. Robert A. Citron, Dr. James Noel, Mr. Don Rauscher, M. Lenco, Dr. Russell Eberhart, Miss Diana W. Scott, Mr. Dieter Kohnke, Dr. Wolfgang Kitschler, Dr. Melvin A. Rosenfeld and Dr. John Cutbill.



(Left to Right) Dr. Martin N. Cobb, M. Jean-louis Mauvais, Dr. Shoichi Nambu, Dr. William B. Brogden, Dr. Carl H. Oppenheimer and Dr. James Noel.

Thirteen countries were represented at the Conference. These included the United States, Belgium, Italy, England, Mexico, Germany, France, Spain, Canada, Japan, Luxembourg, Turkey and Scotland.



(Left to Right) Mr. Dieter Kohnke, Dr. Wolfgang Kitschler, Dr. T. V. Loudon, Dr. Robert A. Citron, Dr. Tuncay Saydam, Mr. Juan Toledo M., Dr. Ramon Margalef, Dr. Armand Nassogne, Dr. Hans Jorgen Helms and Dr. John E. Peachey.



(Left to Right) Dr. Armand Nassogne, Dr. Melvin A. Rosenfeld, Dr. John Cutbill, Dr. G. J. Kovacs, Mr. Malcolm Thurgur, Dr. Bruce Lighthart, Dr. J. M. Colebrook, Dr. Dave Berg, Dr. Martin N. Cobb, M. Jean-louis Mauvais, Dr. William Brogden and Dr. Robert A. Citron.

The wide diversity of backgrounds and disciplines contributed to a rich diversity of opinions and ideas.

As the world's populations increase and land and water use change, it is imperative that land and water use criteria or change be documented with the best possible data base before decisions are made. Our environment is so complex that a single group of data or information will no longer suffice for good planning implementation. Before we use any portion of the earth's surface, the question must be asked, "What will this change do to the local area, the local system, the regional area, the continent, or the world?" Smoke introduced into the air has far-reaching significance to the environment. Materials introduced or changes made along our shorelines may influence current patterns and water quality. Changes in upland areas may be significant to erosion and eventual fertilization of the coastal zone or oceanic waters. For example, the fresh water from the Congo River can be detected at flood conditions approximately 1,500 miles into the Atlantic Ocean.

Perhaps, because of sovereign rights, international differences of opinion, or territorial rights of the oceans and atmosphere, the idealist who insists that our environmental data can be pooled and made useful is fighting a losing battle. However, with escalating costs and an increasing accumulation of environmental data from all sources, it is now the time for idealistic planning. Even if it is impossible to obtain agreement about the types of data needed, the language for data processing, differences in language meaning, etc., the importance of the subject dictates that we must make a start.

Perhaps this concept of need for data coordination is not apparent to the politician who is generally responsible for land use decisions. However, to the environmental scientists who may look at regional or larger environmental balance, the lack of data coordination is a serious handicap and often may put the scientist into a position where he cannot make a value judgement because he cannot describe a discrete environmental balance. The results of projected land use may provide such a wide range of change that it could not be differentiated from natural environmental fluctuation. At such a time, when administrations come to the decision making point and the scientist is indecisive in his environmental analysis, the decision maker may wonder why we have spent so much money to obtain data.

This does not mean that by some magic, when large amounts of data or even all environmental data are in a network for use, that all environmental change can be documented and evaluated. Because at the same time the data base is consolidated a new group of scientists must be trained to utilize and optimize the available data and information in a "systems" approach so that it can be applied to needs for land, air or water use planning.

This Conference was supported in part by the Special Program Panel on Eco-Sciences of the North Atlantic Treaty Organization. Facilities and space were provided by the Houston Museum of Natural Science who generously opened their doors to us; a special thanks to Dr. Tom Pulley and Mr. Carl Aiken for assistance above and beyond the call of duty.

I wish to thank the members of the Conference Organizing Committee, Dr. John E. Peachey, Dr. Hans Jorgen Helms, Mr. J. Heath, Mr. Henry Fleming, Dr. William B. Brogden, and Dr. Andreas Rannestad for their advice and assistance in organizing this Conference. A special thanks to Dr. Andreas Rannestad for his continued support and advice both in organizing the Conference and in editing the proceedings.

I also wish to thank Dr. William Brogden and my wife, Mrs. Dorothy Oppenheimer, for handling all of the details that were necessary for the success of the Conference. And, of course, these Proceedings would not be possible without the expert verbatim reporting of Mrs. Oppenheimer.

I would also like to thank each and every one of the participants for their open and honest comments drawn from their many years of experience. Without this open and honest exchange of ideas and opinions, the Conference could not have been a success.

Finally, I would like to thank the people of the City of Houston for making our short stay in their fair city such a delight.

Dr. Carl H. Oppenheimer
Editor

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