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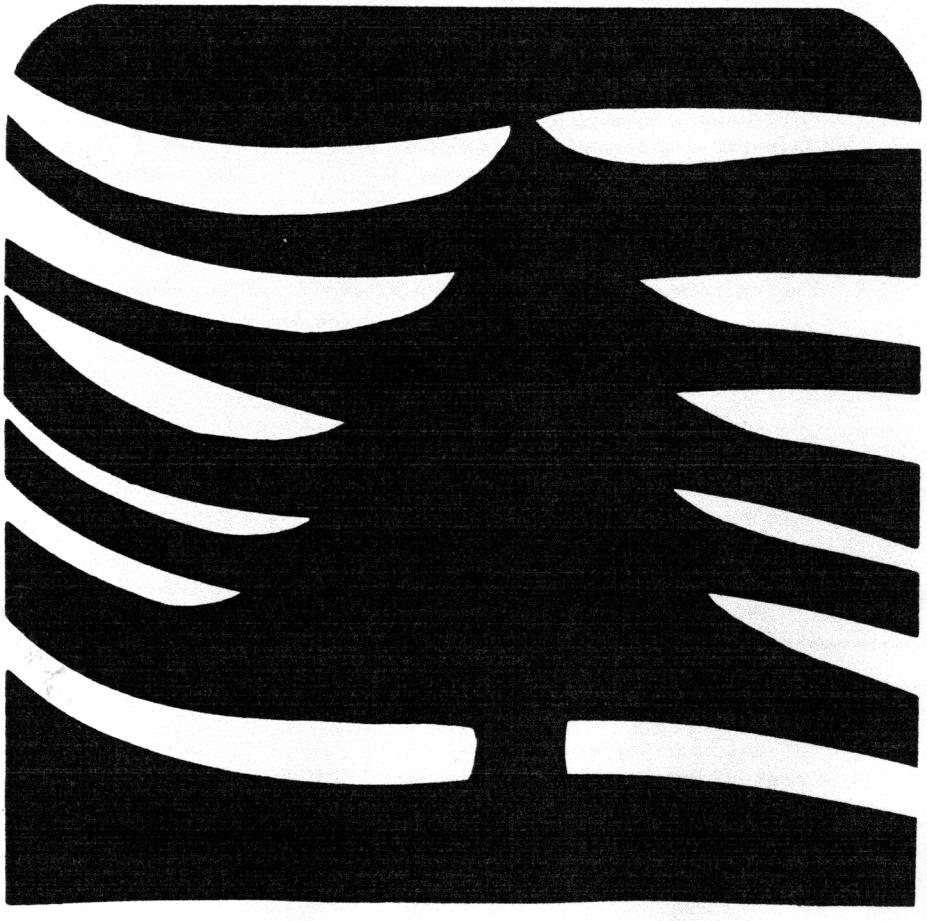
Effects of Air Pollutants on Mediterranean and Temperate Forest Ecosystems

June 22-27, 1980, Riverside, California



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PREFACE

Sulfur dioxide from fuel combustion and ore smelting operations has caused significant damage to forest communities throughout the industrialized world. In the temperate regions, notably in Europe, the United States, Canada, and Japan, examples of damage and losses resulting from this pollutant are well-documented. Hydrogen fluoride emissions from aluminum reduction plants, brick kilns, and phosphate fertilizer plants also have caused significant damage in many localities. In Mediterranean climates, the combination of abundant sunshine and poorly controlled emissions of nitrogen oxides and hydrocarbons has resulted in extensive forested regions being exposed to photochemical oxidant air pollution. Ozone is the most damaging pollutant in this mixture. Acidic precipitation, derived principally from sulfur oxide emissions, recently has been shown to have severe effects on aquatic ecosystems in northeastern United States, Canada, and northern Europe. The projected increase in the use of coal for energy generation and the continuing growth of urban centers, accompanied by automobile emissions, are two conditions that suggest a continuing and more pervasive influence of air pollution on terrestrial and related aquatic ecosystems.

A large body of knowledge has been assembled that describes pollutant effects on individual species as a result of both field observations and controlled experiments. Efforts are being made to use the tools of systems analysis (modeling) to interpret and predict pollutant effects on processes at both the individual species and plant community levels. The ultimate goal is to improve interpretation of pollutant effects on ecological systems so that optimal protective and management measures can be taken to assure a more healthy environment.

Experimenters and modelers can advance more rapidly if a better exchange of ideas and essential data can be stimulated. A symposium was planned to encourage closer communication between experimentalists carrying out specialized studies of the effects of major air pollutants on individual forest species and researchers using computer simulation models to interpret and predict long-term pollutant effects at the plant community and ecosystem levels. This Symposium, held in Riverside, California, June 22-27, 1980, was designed to report and discuss the state of knowledge of single species-single pollutant relationships, the interactions of producers, consumers, and decomposers under pollutant stress, and the use of ecological systems models for interpretation and prediction of pollutant effects. In addition, the present state of knowledge was examined in relation to an overarching ecological concept: resilience of ecosystems. Another important question was the search for indicators of systems-level effects of air pollution on ecosystems. For example, is an effect on nutrient cycling a reliable indicator of system-level change induced by pollution?

Twenty-eight papers were presented in the formal sessions and 29 poster summaries were displayed concurrently. Registered participants numbered 128. Most participants attended a field trip to the San Bernardino mountains for one-half day. Fifteen nations were represented including Austria, Canada, Czechoslovakia, Denmark, Egypt, West Germany, Japan, Mexico, Norway, Poland, Saudi Arabia, Sweden, Switzerland, United States of America, and Yugoslavia.

To facilitate the publication of the Symposium Proceedings, we decided to have each author assume full responsibility for submitting manuscripts in photo-ready format by the time the conference convened. The views expressed in each paper are those of the author and not necessarily those of the sponsoring organizations. Trade names are used solely for necessary information and do not imply endorsement by the sponsoring organizations.

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