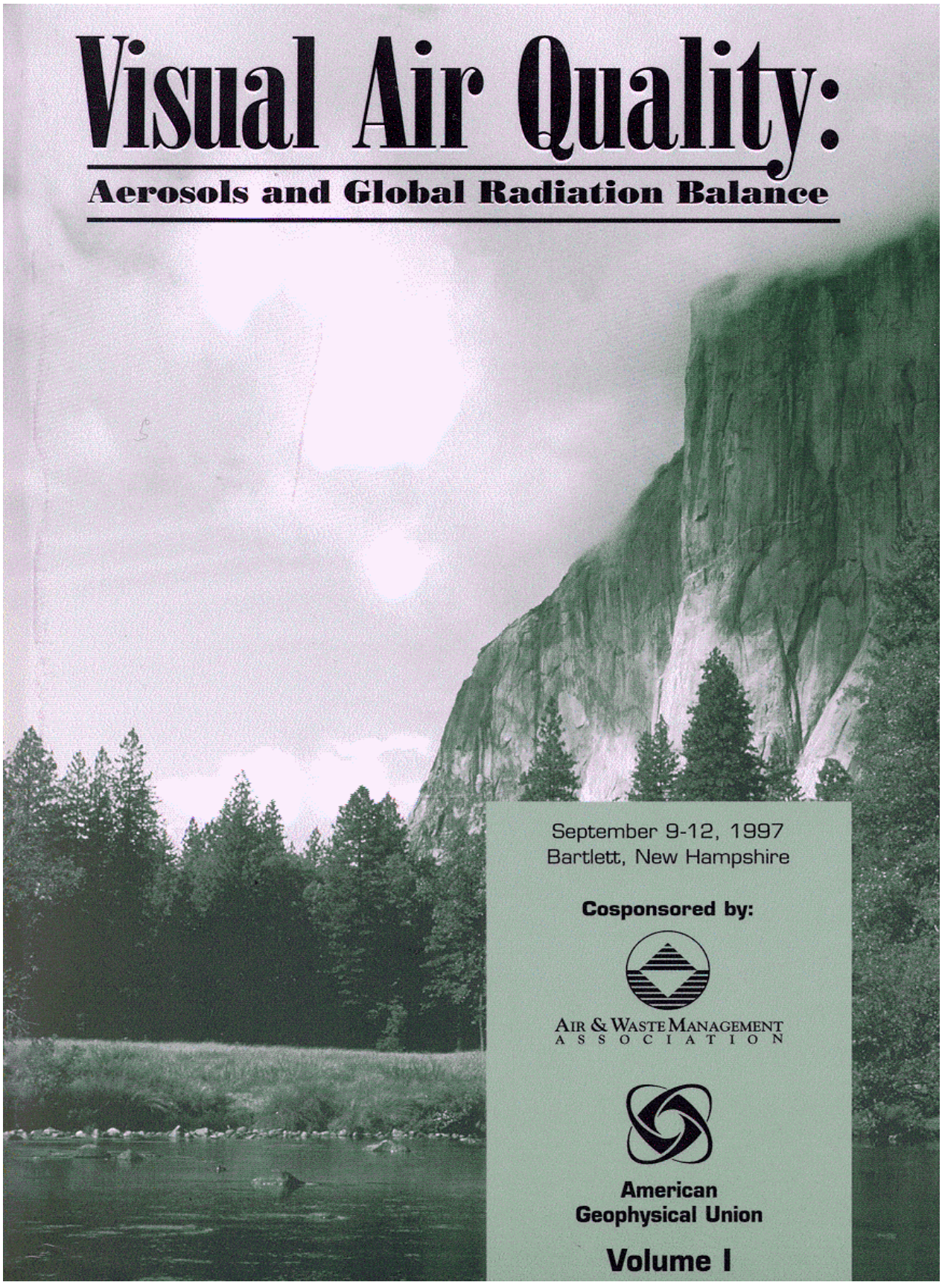
Visual Air Quality:

Aerosols and Global Radiation Balance



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Visual Air Quality, Aerosols, and Global Radiation Balance

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PREFACE

Atmospheric aerosols affect the propagation of light and other radiation through the atmosphere and thus influence both the visibility of scenic vistas and the climate-related radiation balance of the earth. Because of this linkage, the Air and Waste Management Association and the American Geophysical Union jointly sponsored the Specialty Conference on Visual Air Quality, Aerosols, and Global Radiation Balance at Bartlett, New Hampshire, on 9-12 September 1997. This conference was the second such cooperatively-sponsored meeting and the fifth visibility-related specialty conference of the A&WMA.

This volume of conference proceedings is a record of the presentations made at the conference. It includes, at the discretion of the author, either a complete technical paper or a synopsis of each work. The material presented here has not been peer reviewed. Special sections of the Journal of the Air and Waste Management Association and the Journal of Geophysical Research, expected to be published in about one year, will contain peer reviewed versions of many of the papers presented at this conference.

126 papers were presented at the conference. They addressed advances in the scientific understanding of the transfer of visible and infra-red radiation through the atmosphere and of the origins, physics, and chemistry of the aerosols that scatter and absorb that radiation. Many field experiments that addressed visibility in urban and scenic areas and the climate-related radiation balance of areas of the earth were described. Societal issues related to the conference themes were also addressed.

The conference was preceded by two half-day short courses that addressed topics related to the main themes of the meeting. A course on Applied Aerosol Light Extinction Modeling was presented by Douglas H. Lowenthal of the Desert Research Institute. Aerosol Effects on Global Climate Change and Visibility was the subject a second course, presented by V. Ramaswamy of the NOAA Geophysical Fluid Dynamics Laboratory and L. Willard Richards of Sonoma Technology, Inc.

The conference proper began with four extended lectures on the state of the art. Timothy S. Bates of the NOAA Pacific Marine Environmental Laboratory discussed several aerosol characterization and process studies that are focused on improving the calculation of climate forcing by aerosol particles, an important process that is currently poorly quantified. Christian Seigneur of Atmospheric and Environmental Research, Inc., reviewed and compared the capabilities of three-dimensional air quality models that have the capability of simulating the formation of fine particles in the atmosphere and discussed where improvements are needed. Kimberly Prather of the University of California at Riverside described the work that she and others have been doing on real-time chemical analysis of single atmospheric particles, a new approach that may liberate some aerosol researchers from collecting samples on filters and analyzing them in the laboratory. And Barbara J. Turpin of Rutgers University provided an overview of findings and challenges in the measurement and simulation of atmospheric organic particles, a topic that arose often throughout the conference.

As befits a conference that addressed topics of global concern, the participation in the conference included many individuals from outside the United States. Several papers were presented by authors from Canada, and that country was also well represented by conference attendees. Other presenters came from institutions in Australia, Estonia, Finland, Mexico, and Portugal, and an even wider international spectrum was represented in the authorship of papers and in the attendance at the meeting.

It was particularly gratifying to observe the growth in the interchange of information between the climatic aerosol and scenic visibility aerosol communities since the first joint specialty conference at Snowbird, Utah, in 1994. The current conference revealed that both communities have benefitted increasingly from techniques and knowledge that were developed and applied by researchers in the other community.

As Conference Technical Program Chairman, I had the privilege to work with a dedicated team of individuals in the 15-month long process of organizing this conference. It was a learning experience to see how much effort by so many people was needed to execute a successful meeting. Most of the work over those 15 months was done by a team of dedicated co-chairs - L. Willard Richards of Sonoma Technology, Inc., Philip B. Russell of the NASA Ames Research Center and Pradeep Saxena of the Electric Power Research Institute - plus Charles E. McDade of ENSR Corp. (the chairman of the A&WMA's Visibility Technical Committee, the principal sponsoring committee of the conference) and Adrianne Carolla of the A&WMA staff. John Makar of Ross Air Systems organized the successful exhibition and represented the New England Section of the A&WMA. L. Willard Richards also organized the short courses that were presented the day before the conference and arranged the nature-oriented outings that took place on the second afternoon of the conference.

Substantial administrative support was provided by Elaine Houston of ENSR Corp. as well as by Louise Wallach and Jane Wagner of A&WMA. The abstract book was composed by Amy Butler and this proceedings volume was composed by Keri Conley, both at the A&WMA. A small army of dedicated session co-chairs, whose names are given on the session title pages in this volume, rounded out the organizing team for the meeting. I am thankful for the efforts of every one of these individuals, as well as for the contributions of the authors of the many presentations and of those who worked behind the scenes.

Ivar Tombach
Technical Program Chairman

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Please contact the author(s) directly for copies of their manuscripts]

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