

EDITORIAL

Conference on Global Measurement Systems for Atmospheric Composition

In May 1997 a conference on Global Measurement Systems for Atmospheric Composition was organized in Toronto, Ontario, Canada, by three international organizations, the International Global Atmospheric Chemistry Program (IGAC), Stratospheric Processes and Their Role in Climate (SPARC), and the Global Atmospheric Watch (GAW), collaborating with two local sponsors, the Canadian Space Agency (CSA) and the Atmospheric Environment Service (AES). Additional travel support was provided by the Natural Environment Research Council (NERC) of the United Kingdom, the Committee on Space Research (COSPAR), the European Space Agency (ESA), and the World Meteorological Organization (WMO). The local arrangements were provided by the Department of Physics of the University of Toronto.

The conference was organized because of the realization that the chemical composition of the atmosphere is changing on a global scale and that this has far-reaching implications for the health of the environment and the future of human society. This leads to a requirement that many nations participate in assessing the current state and trends of the chemical state of the atmosphere and in turn the assembly of global measurement systems for atmospheric composition. Finally, the skills of a large number of people in various professions are required to make such large undertakings politically and scientifically acceptable, as well as financially viable.

Thus this conference brought together about 120 managers, scientists, and policy makers to discuss current knowledge of and predictive capabilities for atmospheric composition, to define the near-term requirements for global measurement systems, and to begin developing a framework for more comprehensive systems in the future. A total of over 120 papers was presented over three days in 15 sessions.

One of the clear messages of the conference was the understanding that no single measurement or modeling effort was sufficient to comprehend the problem, but in all cases a synergy between methods was required to make significant progress on the science. Increased interaction between the various groups is therefore indicated as the best way to proceed.

Some of the papers presented at this conference have been gathered here in this special issue of *Journal of the Atmospheric Sciences*. The diversity of the topics covered illustrates some of the problems of the field—there are an enormous number of variables and an enormous diversity in time and space scales. Problems and issues occur on local, regional, and global scales. Some occur quickly and disappear quickly. Some only appear over long periods of time, sometimes longer than human lifetime and certainly longer than the funding cycles of any agencies. A comprehensive picture will take an extremely long time to develop, if that goal is even feasible.

The first group of papers concern satellite measurements. Some new instruments are presented that will be launched within the next few years yielding new information on the state of the atmosphere. A particular emphasis of these instruments is on the lower atmosphere and the troposphere. The second group of papers concerns aerosols, an atmospheric component that is extremely pervasive, very important in climate and composition studies, and extremely hard to quantify. The final group concerns measurements of atmospheric gases with emphasis on the tropospheric region. No collection of papers is complete; indeed, if it were possible to produce a complete collection, then our task would be done. However, these papers span the gamut of the regime from global measurements from space to local measurements from the ground.

The organizers of the conference would like to thank all those who participated in the conference for their time and efforts, all our sponsors for their generous assistance, and the staff of the *Journal of the Atmospheric Science* for their assistance in preparing this special issue.

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