EDITORIAL

Winter Visibility Study

The research reported in this special issue comes from analyses of data that were collected as part of the Navajo Generating Station Winter Visibility Study (WVS), an extensive air-quality and meterological field study conducted in the winter of 1989/90 in the Colorado Plateau region of the southwestern United States. The WVS was funded by the Salt River Project (SRP), based in Phoenix, Arizona, and was focused on assessing winter visibility impairments in Grand Canyon National Park and the improvements to visibility that might result if SO_2 emissions were reduced at the Navajo Generating Station, a 2250-MW coal-fired power plant operated by SRP at Page, Arizona. Some of the contributors to this special issue were participants in the field effort and the analyses that followed. Others were attracted by the unique opportunities for research in complex terrain meteorology afforded by the extensive, high quality dataset that came from the WVS field effort.

Research performed in applications-oriented or regulatory-motivated studies such as the WVS often fail to appear in the peer-reviewed scientific literature because of funding, timing, and other constraints. It is a tribute to the authors of this special issue that their research, which in several cases was first presented at the 84th Annual Meeting of the Air and Waste Management Association in Vancover, British Columbia, in June of 1991, has been carried to the peer-reviewed publication stage so long after the WVS and its funding ended.

Seven articles make up this special issue on the Winter Visibility Study. Two articles on the transport and diffusion of air pollutants from NGS to the Grand Canyon lead the special issue, introducing the WVS and reporting key findings on regional pollutant transport between NGS and the Grand Canyon. This is followed by an article describing Doppler lidar observations from the vantage point of the canyon's South Rim and discussing postulated aerosol transport mechanisms. The four remaining papers focus on boundary layer evolution, complex terrain phenomena, and climatology to better understand the wintertime meteorology of the Colorado Plateau. The first of these papers describes the wintertime evolution of boundary layers inside the Grand Canyon. This is followed by a paper describing the evolution of boundary layer structure over the Colorado Plateau Basin, the large basin upstream of the Grand Canyon. Of the final two articles, one reports on the diurnal evolution of regional near-surface wind fields during clear undisturbed wintertime periods and the other uses a cluster analysis technique originally developed for a complex terrain area in Switzerland to classify or categorize hourly regional wind field patterns during the entire wintertime experiment and to relate these to synoptic and diurnal forcings.

The authors wish to thank then Chief Editor Dr. Steve Hanna and his assistant, Linda Hanna, for their encouragement of this special issue and their handling of the manuscripts. We hope that the papers in this issue will prove useful in improving understanding of the meteorology and air quality of the Grand Canyon region.

C. David Whiteman
Guest Editor