

EDITORIAL

Tropospheric Profiling—Matching Research and Operational Needs with Emerging Technologies

Measurements of the fundamental atmospheric variables are a key in both forecasting and successful research investigation. In the interest of promoting better interactions among technologists, operationalists, and researchers, the Second International Symposium on Tropospheric Profiling: Needs and Technologies was held 10–13 September 1991 in Boulder, Colorado. The symposium was jointly sponsored by the National Center for Atmospheric Research,¹ the NOAA Wave Propagation Laboratory, and the German Meteorological Society, with the cooperation of the American Meteorological Society and COST-74.² [The inaugural symposium was held in Boulder in June 1988 and was the subject of a previous special issue of the *Journal of Atmospheric and Oceanic Technology* (Vol. 4, No. 3, 1989).]

The symposium featured the dual issues of scientific needs for improved profiling in the troposphere and the capabilities of current and future technologies to address those needs in 100 contributed and 13 invited papers plus eight corporate exhibits. Invited papers on profiling technologies and techniques were presented by Walt Dabberdt (integrated sounding systems), Kit Hayden (satellites), Graeme Kelly (assimilation of profiles for NWP), Ralph Petersen (wind profiler network data assimilation), and Ed Westwater (water vapor). Invited papers on needs issues associated with climate were presented by Bruce Albrecht (marine boundary layers), Robert Cess (climate feedbacks), Graeme Stephens (radiation and climate), and Peter Webster (detecting climate change). Invited papers on needs issues associated with atmospheric chemistry were presented by Ed Danielson (tropospheric–stratospheric exchange), Roland Draxler (chemical transport and trajectories), and Daniel Jacob (chemical transformations). The contributed papers were organized into seven sessions: lidar and optical methods (11 papers), radar and sodar (13 papers), radio acoustic temperature sounding (RASS, 11 papers), wind profilers (20 papers), passive and in situ methods (13 papers), networks and integrated systems (19 papers), and models, theory, and algorithms (13 papers).

The symposium had more than 200 registered attendees representing a dozen countries. About one-fifth of the papers were submitted from institutions outside the United States. A preprint volume of two-page extended abstracts can be obtained by sending \$25 to Symposium on Tropospheric Profiling, Attn: S. Zucker, NCAR, P.O. Box 3000, Boulder, CO 80307-3000.

Part 1 of this issue of the *Journal of Atmospheric and Oceanic Technology* contains ten papers, based on presentations at the symposium, that address tropospheric profiling. Five of the seven session themes are represented: lidar (Devara and Raji; Ismail and Browell), RASS (Tsuda et al.; Angevine et al.; Peters and Kirtzel), wind profilers (Warnock et al.; Nastrom et al.; Gage et al.), integrated systems (Senff et al.), and algorithms (Miller et al.). Whereas the symposium featured both needs and technologies, we note that these papers (with the exception of Miller et al.) deal with advancement of specific technologies or the initial exploration of their research appli-

¹ The National Center for Atmospheric Research is sponsored by the National Science Foundation.

² COST denotes the European cooperation in the field of scientific and technical research; COST-74 is the project entitled "implementation of a European research project on the utilization of UHF–VHF radar wind profiler networks for improving weather forecasting in Europe."

cations. Perhaps this illustrates the difficulty of conceptualizing technology from the needs perspective or, at least, in formulating these concepts in publishable form. A similar imbalance in the first symposium was also noted in the editorial comments by Mike Hardesty and Walt Dabberdt, who recommended a greater dialogue between scientists and technologists on the question: "How can advances in measurement technology be efficiently brought to bear on important problems?" If indeed this is the solution, it appears that this dialogue is slow in developing. Those interested in these issues are encouraged to attend the Third International Symposium on Tropospheric Profiling: Needs and Technologies to be held 30 August–2 September 1994 in Hamburg, Germany (see the *Bulletin of the American Meteorological Society* for details).

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Guest Editors