PREFACE

The 10th Symposium of the International Society for Acoustic Remote Sensing, ISARS2000, was held at the University of Auckland, Auckland, New Zealand, from 26 November to 1 December 2000. This special issue of the *Journal of Atmospheric and Oceanic Technology* (*JTECH*) contains a collection of articles and notes derived from papers presented there that were then subjected to the same rigorous review as are regular *JTECH* submissions.

More than 70 scientists from 17 countries contributed to sessions encompassing theoretical and technical developments and field observations. The anniversary meeting at Auckland was particularly characterized by a convivial atmosphere and by a hearty exchange of ideas between different groups, such as the marine and atmospheric acoustics communities. The 11 articles in this special issue represent a snapshot of the current progress in the field of acoustic remote sensing as presented at ISARS2000, with particular emphasis on applications of atmospheric acoustic scattering.

ISARS had its genesis at a time when atmospheric acoustic sounding was in its infancy, and early symposia were concerned with the theoretical basis and fundamental technological developments. During the 1980s, introduction of small phased-array acoustic profilers (minisodars) led to a dramatic increase in useful applications and observations. Sodars are now a well-established tool for atmospheric boundary layer studies, and the trend seen at ISARS2000 is toward extending use into

- deriving other physical parameters from the sodar observables,
- applications in complex terrain, and
- more sophisticated acoustic and/or signal-processing design.

The four papers by Lokoshchenko, Kramar and Kouznetsov, Pan, and Raabe et al. are all concerned with obtaining a better description of the atmospheric boundary layer by combining acoustic measurements to estimate other parameters, such as heat fluxes. An example of the utility of sodars in dynamical studies is provided by von Hünerbein and Richner, in studying stratus convection, and by Helmis et al., in a study of island topographical effects. Increasing interest in urban environments is reflected in the paper by Akai et al.: urban areas have traditionally been poorly accessed by acoustic remote methods because of background noise, echoes, and disturbance of inhabitants. The papers by Bradley and his colleagues investigate optimization of acoustic sounders for extracting information about temperature profiles or precipitation by extending beyond the usual transmitted frequencies. The work by Ziemann et al. shows how acoustic propagation can be used to visualize patterns of turbulent wind and temperature structure. This tomography approach is quite different from the usual column observations of sodars and their extension via Taylor's hypothesis, and some comparison between the two methods would be most interesting. Many of the significant theoretical advances have come from Russian scientists, and it is pleasing to include a review by Kallistratova in this special issue.

This collection of papers indicates the diversity and vitality of the field of acoustic remote sensing and provides pointers to the next generation of tools for boundary layer investigation. ISARS2002 will be held 24–28 June 2002 in Rome, Italy. For more information refer to the conference Web page (http://isars2002.ifa.rm.cnr.it/).

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