

Preface

The 9th International Joint Symposium on **Atmospheric and Ocean Optics and Atmospheric Physics** was held by the Institute of Atmospheric Optics SB RAS and the Institute of Solar-Terrestrial Physics SB RAS on July 2–5, 2002 in Tomsk in accordance with the Resolution of the Presidium of SB RAS and the Plan of Meetings and Conferences of the Siberian Branch of the Russian Academy of Sciences in 2002.

The Symposium was held under the auspices of the Siberian Branch of RAS, Russian Foundation for Basic Research, the European Office of Aerospace Research & Development (EOARD), and the International Society for Optical Engineering (SPIE), the SPIE Russia Chapter, and the Optical Society of America.

For the first time this Symposium incorporated three conferences with the main topics being as follows:

- Molecular Spectroscopy and Atmospheric Radiative Processes;
- Optical Radiation Propagation in the Atmosphere and Ocean;
- Optical Investigation of the Atmosphere and Ocean;
- Atmospheric Physics.

The Symposium's Program included 273 presentations, among them 7 plenary, 85 oral, and 181 poster presentations.

The Symposium co-chairs were Professor **G.G. Matvienko** (Tomsk) and Academician **G.A. Zherebtsov** (Irkutsk). The Organizing Committee was headed by Professor **V.P. Lukin**, Scientific Secretary was Dr. **F.Yu. Kanev**.

Representatives of 35 research organizations from Russia, Korea, Belarus, Uzbekistan, and Kazakhstan took part in the Symposium. Co-authors of the presented papers were scientists from such countries as France, Sweden, USA, China, Georgia, Italy, Bulgaria, Ukraine.

The papers presented new theoretical and practical results. All sections of the Symposium Program were well represented by non-Tomsk participants. The Symposium included two plenary sessions, and its conferences embraced 13 topical sections and two poster sections, each incorporating two conferences.

The presentations on most urgent problems in atmospheric optics were presented at the plenary sessions.

The Conference "Molecular Spectroscopy and Atmospheric Radiative Processes" incorporated 20 oral and 44 poster presentations. Investigations were concentrated on the problems of most rational use of the results of classical molecular spectroscopy in climate models and algorithms for geophysical applications of atmospheric optics. The Section "Radiative Regime and Climate Problems" was a new one for this Symposium.

The Conference "Optical Radiation Propagation in the Atmosphere and Ocean" involved 21 oral and 29 poster presentations devoted to investigations of atmospheric aerosol, methods for solution of the radiative transfer equation, in particular, for non-spherical particles, as well as various representations of the aerosol scattering phase functions and methods for reconstruction of aerosol microstructure from the data of optical measurements. Peculiarities of fluctuations of optical fields in the turbulent atmosphere and the related problems of adaptive optics were considered in detail. A particular attention was paid to the urgency of correction in the problems of vision, in particular, from space, of optical images and beams formed in the atmosphere.

The Conference "Optical Investigation of the Atmosphere and Ocean" was most numerous. Total of 29 oral and 60 poster presentations were discussed within the framework of this conference. Analysis of the papers presented shows that works on the development of mathematical models for monitoring and prediction of aerosol transport both on regional scales and nearby the source are being conducted in Russia. Many presentations at this Conference were devoted to new instrumental systems, optimization of some their units, adaptation of sensing systems to solution of some applied problems, and inter-calibration of measuring equipment. In papers on acoustic sensing, the main attention was paid to the study of wind and turbulent conditions in the lower atmosphere.

The Conference "Atmospheric Physics" incorporated 16 oral and 36 poster presentations. This Conference included the following sections: "Structure and Dynamics of the Middle Atmosphere," "Dynamics of the Atmosphere and Climate of the Asian Region," "Physical Processes and Phenomena in the Earth's Thermosphere and Ionosphere." The problem of atmospheric ozone was discussed from the viewpoint of its global distribution (TOMS data), total content in some regions, and behavior of the vertical profile of ozone concentration. A particular attention was paid to the role of atmospheric aerosol in the transfer of ultraviolet radiation.

In the period from June 26 to June 30, 2002, that is, a week before the Symposium, the School for Young Scientists was held in Tomsk, and this allowed some young scientists to take part in the Symposium as well. As a result, every third participant of the Symposium was a scientist younger than 33.

In conclusion, the Symposium noted the following.

1. Within the framework of the Symposium, the participants have exchanged new data, results, and ideas.
2. Most active research teams working in this field have been revealed, and the main results of their work have been demonstrated.
3. Geophysical research have been presented more widely than in previous years.
4. Bases have been gained for preparation of proposals on new programs and cooperative projects.
5. All the subfields discussed within the Symposium's sections showed good promises for further development, but intensification of the coordination activity of the Ministry of Science and the State Ecology Committee of the RF is needed.
6. It was planned to hold the next International Symposium "Atmospheric and Ocean Optics and Atmospheric Physics" in 2003 with wider participation of foreign scientists.
7. Ten undergraduate and first-year postgraduate students were selected for one-year free membership in the Optical Society of America.

The Symposium decided:

1. To continue holding regular international symposia and conferences in order to keep and extend scientific contacts among scientists and research teams in Russia and other countries.
2. The experience of holding the Symposium joining investigations in the atmospheric and ocean optics and atmospheric physics can be considered successful. It would be nice to widen the number of participating research teams dealing with problems of optics of ocean and the sea surface.
3. To pay attention to further development of climate and ecological programs covering vast regions of Russia and the world. To favor conduction of combined experiments joining efforts of different research teams.
4. To recommend the presentations at the Symposium for publication in two topical SPIE issues.
5. To note high scientific and organizational level of the Symposium and to express gratitude to the Institute of Atmospheric Optics, SB RAS and the Organizing Committee of the Institute of Solar-Terrestrial Physics, SB RAS for organization of the Symposium.
6. To express gratitude to the Russian Foundation for Basic Research, Optical Society of America, European Office of Aerospace Research & Development (EOARD), International Society for Optical Engineering (SPIE), as well as personally to Dr. Edmund Akopov, Dr. Alexander Glass, Dr. Guenter Huber, International Council Chair, and Mrs. Kari Apter, Manager, OSA Executive Office Programs for the help in organization of the Symposium including financial support and publication of the Symposium proceedings.
7. To recommend for publication a topical issue of *Atmospheric and Oceanic Optics* based on the materials presented at the Symposium.

This topical issue was prepared following this Resolution.

*Chairman of the Organizing Committee,
Professor V.P. Lukin*