

SECOND INTERREPUBLIC SYMPOSIUM ON ATMOSPHERIC AND OCEAN OPTICS

The Second Interrepublic Symposium on Atmospheric and Ocean Optics was held by the Institute of Atmospheric Optics SB RAS in June 20 to 23, 1995, in Tomsk in accordance with the resolution of the Presidium of Siberian Branch of the Russian Academy of Sciences based on the plan of meetings and conferences of the Siberian Branch for 1995.

The Symposium unites the conferences held successively every two or three years: the All-Union Symposium on Laser and Acoustic Sounding of the Atmosphere, the All-Union Symposium on Laser Radiation Propagation through the Atmosphere and Aqueous Media, and the Conference on Atmospheric Optics. The Organizing Committee of the Symposium was headed by Academician V.E. Zuev, Director of the Institute of Atmospheric Optics.

The representatives of 23 scientific organizations from Russia and CIS participated in the Symposium. The reports presented contained, as a rule, new theoretical and practical results. Unfortunately, some speakers were unable to participate in the Symposium because of financial problems. However, all the topics at the symposium were presented by the participants from scientific bodies of Moscow, Nizhnii Novgorod, Kazan', Novosibirsk, Irkutsk, Krasnoyarsk, St. Petersburg.

Representatives of the institutes from Belorussia (Minsk) and Kazakhstan (Pavlodar) also took part in the work of the Symposium; Tomsk was represented by scientists from the Institute of Atmospheric Optics, the Tomsk State University, the Tomsk Polytechnical University, the Siberian Physicotechnical Institute, Institute of Design and Technology "Optika" SB RAS. General results of the symposium are as follows.

At the plenary session 8 reports were presented.

Section 1. Absorption of Optical Waves in Gaseous and Condensed Media. 8 oral and 20 poster presentations have been discussed here. The reports analyzed the problems of the efficiency of methods for calculation of optical properties of gaseous and condensed media, the accuracy of determination of gas content in the atmosphere. Most of the reports presented in the session include the modern original results, among them those obtained under the programs of bilateral collaboration with the foreign laboratories (6 reports).

Section 2. Scattering of Optical Waves in the Atmosphere and the Ocean. 10 oral reports and 6 poster reports were presented. The results of long-term programs on investigation of aerosols in different regions of the former Soviet Union as well as different representations of aerosol and hydrosol scattering phase functions and methods of reconstruction of aerosol microstructure have been discussed.

Section 3. Propagation of Optical Radiation in Randomly Inhomogeneous and Scattering Media. 7 oral and 11 poster presentations were delivered here.

Section 4. Image Transfer and Processing. The methods for processing and reconstruction of images transferred through scattering media were considered (6 oral presentations).

Section 5. Nonlinear Effects in Radiation Propagating through the Atmosphere and Aqueous Media. There were 7 oral and 8 poster presentations considered the problems of development of the theory describing the optical wave fluctuations under conditions of nonlinear interactions as well as the methods and technical means for remote diagnostics of the atmospheric parameters. Owing to the importance of these problems it was stressed that considerable attention must be given to the development of theoretical foundations and technical means of adaptive optics.

Section 6. Radiation, Clouds, and Aerosol. There were 8 oral and 8 poster presentations dealt with the problems of radiation interaction with inhomogeneous cloud fields and the calculation of radiation balance in the atmosphere.

Section 7. Optical and Acoustic Methods of Sounding of the Atmosphere, the Ocean, and an Underlying Surface. There were 16 oral and 31 poster presentations concerned the most urgent problems of laser and acoustic sounding as well as the methods of spaceborne sounding of atmospheric aerosol, cloudiness and sea surface.

Section 8. Engineering and Equipment for Investigations into the Atmospheric and Ocean Optics. 6 oral and 13 poster papers were presented here. The characteristics of the equipment and stations created for ecological monitoring of the atmosphere and the problems on improvements in the receiving-transmitting equipment for laser ranging systems were considered.

The Section **Adaptive Optics**, being totally new for this symposium, underlines the need for solving the problems of interaction of optical radiation with the substance under conditions of adaptive radiation control. As discussed in this section, it was essential to develop the theoretical foundations and technical means of adaptive optics for reducing the atmospheric effect on the optical radiative transfer, for solving technological problems in the atmosphere. 10 oral and 2 poster reports were presented here.

The Russian Fundamental Research Foundation has financially supported the Symposium (grant No. 95-02-07770-d). This allowed the Organizing Committee to publish the Program and the Paper Abstracts (two volumes) before the beginning of the Symposium as well as to compensate partly for other expenses.

The discussions at the sections and the concluding discussion have come to the following:

- 1) the Symposium has provided an opportunity for sharing information on new developments and technologies among the participants;
- 2) an increased number of researches presented at the Symposium are dealing with the geophysical problems;
- 3) it is advisable for different research groups to prepare proposals on joint scientific projects to apply for funding from various science foundations.

It was a unanimous opinion of the participants that such a wide-scope symposia could be very helpful in the circumstances when certain scientific research areas are severely underfunded.

The Symposium has resolved:

- 1) To continue the practice of holding interrepublic symposia and conferences aimed at preservation of traditional scientific contacts among the scientists and scientific organizations in Russia and CIS and to invite foreign scientists to these conferences.
- 2) The experience of holding symposia on atmospheric and ocean optics should be considered successful. The Organizing Committee must try to extend the number of participating scientific institutions engaged in the problem of ocean and sea surface optics.
- 3) To pay attention to further development of programs on climatic and ecological research not only on regional scale in Russia but also on global scale.
- 4) To facilitate the performance of large complex experiments, which could join efforts from different scientific institutions.
- 5) To recommend the most interesting presentations for publication in a topic issue of the journal *Atmospheric and Oceanic Optics* (No. 12, 1995).
- 6) To acknowledge the Institute of Atmospheric Optics SB RAS for high scientific and organization levels of the Symposium that provided good atmosphere for fruitful discussions.
- 7) To acknowledge the Russian Fundamental Research Foundation for the financial support under the grant No. 95-02-07770-d.

According to the Resolution of the Symposium the papers published in this topic issue have been prepared based on presentations discussed at the Symposium.

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