

Model estimates of the oxygen transfer through Arctic seas surface.

Nadyozhina E. D., Sternzat A. V., Bortkovski R. S., Pikalyova A. A., Egorov B. N. Shkolnik I. M. Proceedings of MGO. 2014. V. 572. P. 7—29.

Using sea-air gas transfer model and climate data, which are obtained on the basis of models set CMIP5 and regional climatic MGO model, the space distribution of oxygen transfer through Arctic seas surface is analyzed. Differences between O₂ fluxes through Barents Sea surface and through Mediterranean Arctic seas (i.e., Kara Sea, Laptevs Sea and East-Siberian Sea) are shown. Calculated values of O₂ fluxes are compared with available results known by publications.

Keywords: gas transfer, oxygen flux, Arctic seas, climate.

Tab. 3. Fig. 6. Ref. 24.

Numerical simulation of the impact of soot aerosol particles on Cu development at the conditions of high atmospheric pollution. Veremey N. E., Dovgaluk Yu. A., Dorofeev E. V., Sinkevich A. A., Komorovskikh K. F. Proceeding of MGO. 2014. V. 572. P. 30—43.

An impact of high concentration of soot aerosol on convective cloud development was investigated by numerical simulation. Atmospheric situation which occurred in Moscow and it's neighborhood on Aug 06 2010 was examined (convective clouds developed in conditions of heavy smoke emission caused by forest fires). Calculations were performed using low-dimensional numerical non-stationary model developed in MGO. It was proposed that soot aerosol had ice-forming properties. It was obtained that presence of soot aerosol resulted in significant increase of precipitation near the Earth surface.

Keywords: soot, numerical simulation, cumulus cloud.

Tabl. 2. Fig. 5. Ref. 19.

Improvement of the photometric method for determining the concentration of soot aerosol in the atmosphere. Uspensky A. A., Volberg N. Sh., Stepakov A. V. Proceedings of MGO. 2014. V. 572. P. 44—56.

We propose a photometric method for determination of soot aerosol in the atmosphere. Method is consisted in collecting of the soot samples on the analytical aerosol filters AFA-VP-10, dissolving the filter with the sample in dimethyl sulfoxide (DMSO), following sonicating of the sample and photometric analyzing of the suspension. Sensitivity of the method – 0,03 mg/m³ at the sampling rate of 20 l/min and a sampling time of 30 min.

Keywords: soot, photometric method, stable suspension, aerosol filters, ultrasonic dispersing, dimethyl sulfoxide (DMSO).

Tab. 2. Fig. 3. Ref. 20.

Monitoring of the atmospheric transparency: results of the measurements during last decades., Makhotkina E. L., Plakhina I. N. Proceeding of MGO. 2014. V. 572. P. 57—88.

Review of the results of the monitoring for the aerosol optical thickness (AOT), turbidity factor of the atmosphere and downwelling solar radiation during last decades is presented for the Russia territory and for the different Earth regions. Empirical trends by the data of the different observation systems: surface actinometric network of Roskomhydromet, global network AERONET for AOT monitoring and satellite monitoring data (MODIS) are considered. Long-term variatios for the aerosol optical thickness for the Russia territory, connected with the aerosol coming in to atmosphere because of volcano eruptions and its transformation processes . Global “dimming” and global “brightening” in the atmosphere are examined in the different Earth regions by the data of the international network observations.

Keywords: monitoring, atmospheric transparency, atmospheric aerosol, network observations, trends.

Tabl. 3. Fig. 9. Ref. 75.

Long-term variability of natural illuminance in Moscow. Shilovtseva O. A. Proceedings of MGO. 2014. V. 572. P. 100—122.

A brief history of daylight measurements development in Russia is presented. The analysis of the monitoring results of total, direct and diffuse of natural illuminance of horizontal surface in Moscow during 1964—2013 is presented. The evaluation of long-term features of yearly day lighting changes was shown that the quasi-cyclic fluctuations occur on the background of statistically significant linear trends of direct illuminance increasing and diffuse illuminance reducing. The increase of the total illuminance is observed, although it is statistically not significant. The most noticeable daylight changes are characteristic of the spring. This agrees quite well with the long-term changes of basic climatic factors (cloudiness, atmospheric transparency, surface albedo).

Keywords: natural illuminance, linear trends, basic climatic factors.

Tab. 5. Fig. 4. Ref. 59.

Peripheral subsystems of the automated airport and network weather observation systems. Medvedev D.N., Persin S. M. Proceeding of MGO. 2014. V. 572. P. 123—139.

Peripheral devices and subsystems for obtaining, processing and displaying of meteorological information in the automated weather observation systems, especially at the airports, are considered. Information on several peripheral subsystems is presented: remote indicating unit (RIU), autonomous sensors displays, runway condition monitoring system, airfield climatic data gathering system, and others. The examples of the information displayed for the meteostaff of the airfield are given. The analysis is set up describing the possibilities of extending the application of the considered subsystems on the related fields like monitoring surface meteorological and geophysical observations over the observation network.

Keywords: automatic measuring system, the display device, information windows, aviation meteorological services, monitoring of automated observation network.

Fig. 8. Ref. 3.

Applying of thunderclouds discrimination criteria in algorithms of new type weather radar data processing. Dorofeev E.V., Lvova M. V., Popov I. B., Tarabukin I. A. Proceedings of MGO. 2014. V. 572. P. 140—152.

The problem of adapting to the new doppler weather radar systems of existing radar criteria used for thunderclouds discrimination is discussed. The procedure for quality control of discrimination algorithms is formulated and on this basis the data of several weather radars is examined. Further development of the algorithms considered is proposed.

Keywords: dangerous weather events, thunderstorm, Doppler weather radar, data comparison.

Tab. 2. Ref. 9.

Using the comparison of meteorological radar data for the relative calibration of weather radars. Dorofeev E.V., Lvova M. V., Popov V. B., Tarabukin I. A. Proceedings of MGO. 2014. V. 572. P. 153—161.

The technique of comparing the series of weather radar data obtained by two independent weather radars is presented. Results of the comparison can be used for operative radar quality estimation and relative calibration.

Keywords: relative calibration, Doppler weather radar, data comparison.

Fig. 4. Ref. 4.

Creating a data management technology in automated archiving system. Dolgih S. G., Shaymardanov V. M. Proceeding of MGO. 2014. V. 572. P. 162—175.

A technology that allows you to organize access to the data archiving system, users' queries. The technology disclosed in the form of a multilevel system. A model for the description of hydrometeorological data. Model-based system is implemented search and management of hydrometeorological data in the automated archiving system. This greatly simplifies the development of management of hydrometeorological data fund.

Keyword: model for the description, dData management, Data, Hydrometeorology.

Fig. 1. Ref. 6.

The features of disturbances of pressure micro variations and electric field during Tekely and Kapchagai earthquakes. Drobzheva Ya. V., Krasnov V. M., Salihov N.M., Drobzhev V. I. Proceeding of MGO. 2014. V. 572. P. 175—189.

The analysis of experimental records of a surface electric field and micro variations of pressure for 2011—2014 has revealed uniqueness of the disturbances registered during Kapchagai and Tekely earthquakes. Additional researches are necessary for the proof of their connection with process of preparation of earthquakes during the repeated strong earthquakes in these centers.

Keywords: disturbance of electric field, microvariation of atmospheric pressure, earthquake.

Fig. 9. Ref. 4/

New technology training in the geopolitical and economic interests of Russia in the Arctic. Byzova N. M. Proceedings of MGO. 2014. V. 572. P. 191—205.

The project “Arctic Floating University” is a new model of interdisciplinary studies. Its target is to integrate innovational programmes of higher education and scientific research on board of the vessel “Professor Molchanov” during Arctic expeditions. The participants are students, lecturers and researchers from universities and industrial institutions. During the expeditions lectures are delivered on the subjects of spatio-temporal organization of ecosystems. Listeners learn to carry out sea and land research.

Key words: Arctic Floating University, innovative projects, research and education programs, the competence approach, the integration of academic disciplines.

Ref. 4.