Peculiarities of convective clouds and precipitation evolution during strong aerosol atmosphere pollution due to forest fires. Dovgalyuk Yu. A., Veremey N. E., Toropova M. L., Sinkevich A. A., Kurov A. B., Volkov N. N., Ignatiev A. A. Proceedings of MGO. 2018. V. 588. P. 7—27.

Results of numerical simulation of evolution of convective clouds and precipitation formed by them in the conditions of severe aerosol pollution of the atmosphere by soot and ash due to forest fires are presented. Cu development cases, observed in Eastern Siberia and Central China, are investigated. For the case of Eastern Siberia it is obtained that soot and ash contribute to precipitation formation which does not occur without aerosol pollution. For Central China it is obtained that aerosol pollution weakly affects clouds and precipitation evolution. It affects cloud top characteristics only.

Keywords: convection, cloud, precipitation, forest fire, aerosol.

Fig. 6. Tab. 5. Ref. 9.

Numerical simulation of electrical processes in storm clouds. Shapovalov V.A. Proceedings of MGO. 2018. V. 588. P. 28—36.

The paper presents a description of the calculation of electrical parameters in the developed three-dimensional non-stationary mathematical model of the convective cloud with detailed account of thermodynamic, microphysical and electrical processes. Some results of calculations of the electric field potential and intensity in the storm cloud at different stages of development are presented.

Hydrothermodynamic block model consists of the equations of motion that describe moist convection in the Boussinesq approximation, microphysical unit based on the use of kinetic equations for the distribution functions of particle mass describes the processes: nucleation, condensation, coagulation of the droplets with the droplets, sublimation, accretion, freezing droplets and the interaction of cloud particles under the influence of the electric field of the cloud.

Keywords: convective cloud, three-dimensional model, electrification of particles, electric charge, field intensity, numerical experiments.

Fig. 1. Ref. 12.

On the possibility of application of unmanned aerial vehicles for the study of electric fields strength of the atmosphere. Torgunakov R. E. Proceedings of MGO. 2018. V. 588. P. 37—46.

The author analyzes the possibility of using medium-altitude long-endurance (MALE) unmanned aerial vehicles as a platform for measuring the strengths of electric fields in the atmosphere. Using the methodology of physical and mathematical modeling of electrostatic fields, the matrixes of calibration coefficients have been calculated and analyzed for several variants of the arrangement of sensors onboard of the UAV.

Keywords: electrical field strength, charge, unmanned aerial vehicle, UAV, flying test-bed.

Tab. 3. Fig. 4. Ref. 8.

Results from observations of the atmospheric surface layer's electricity properties in the polar region. Zainetdinov B. G. Proceedings of MGO. 2018. V. 588. P. 47—61.

Shown are results of an analysis of atmospheric electricity parameters based on observations collected from a network of polar observational stations under optimal weather conditions. Diurnal and annual variations of those parameters have been selected and presented.

Keywords: atmospheric-electrical characteristics, the electric field of the atmosphere, total electrical conductivity of air, diurnal and annual variations.

Fig. 9. Ref. 3.

This study addresses the impact of various horizontal resolutions (HR) and their interactions on forecasts quality for daily heavy rainfall, which adopts the Weather Research and Forecasting (WRF) model, using Advanced-Research WRF (ARW) core, in southwestern Iran. For this purpose, eight different experiment types of the 3-nested domain (D01, DO2 and DO3) are considered, four of which are using convective parameterization (CP) on their fine resolution domain, i.e. DO3. Each experiment type is examined for 10 selected dates, which results in 80 total experiments in total. The performance and efficacy of each experiment types in the triply determined nested domains for different rainfall thresholds are evaluated using statistical indices. For light and moderate rain thresholds, the experiment with 4-km HR (in DO3) without CP emerges as the domain having the least error. Furthermore, for heavy and extreme rain thresholds, the experiment with6-km HR (in DO3) shows adequate results. It should be noted that the light and moderate rainfalls are better described in the absence of CP. Our results also demonstrate that CP particularly improves the quality of forecasts in the event of extreme precipitation thresholds.

Fig. 6. Tab. 3. Ref. 25.

Automated meteorological and solar radiation networks state and functioning overview in 2017 year. Gavrilova S. Y., Ivanova T. A., Lutsko L.V., Erohina A. E., Makhotkin A. N., Kolomeets L.I., Sadikova A. F. Proceedings of MGO. 2018. V. 588. P. 86—109.

It have been presented the main results of automated meteorological/solar radiation complexes and automatic stations state and functioning monitoring for 2017 year, established at the meteorological observational network of Roshydromet in the period from 2009-2012. In actual paper it have been analyzed composition, technical state of automated meteorological and solar radiation networks, quality transfer messages and coding of operational meteorological information in the codes of KN-01 and WAREP data. It have been verified main causes of non-receipting operational messages to data collection centers. It have been given some methodical recommendations to increase the automated meteorological and solar radiation networks efficiency

Keywords: monitoring, automated monitoring network, automated meteorological complex, solar radiation automated complexes, automatic meteorological station, efficiency measure coefficient.

Tab 3. Fig.10.

The natural illuminance mode of differently oriented vertical surfaces according to Moscow State University observations. Gorbarenko E. V., Shilovtseva O. A., Soshinskaya I. V. Proceedings of MGO. 2018. V. 588. P. 110—123.

The results of natural illuminance temporal variability for differently oriented vertical surfaces have been analyzed based on Moscow State University observations for the period of 2014–2017. The values for illuminance of the north-, east-, south-, and west-oriented vertical surfaces under various weather conditions are provided. The correlations between illuminance of the horizontal surface and each of the vertical surfaces have been obtained. The results of the above observations are of interest for indoor lightening evaluation.

Keywords: illuminance, building regulations, wall illuminance, daylighting, natural light.

Tab. 1. Fig. 6. Ref. 7.

On calculations of electrical parameters of troposphere in the conditions of "fair weather". Kashleva L. V., Baranova M. E., Mikhailovskii Yu .P. Proceedings of MGO. 2018. V. 588. P. 124—138.

The article presents the method of calculations of electrical parameters of troposphere in the conditions of "fair weather". The one-dimension model of electric structure of atmosphere is used. There were calculated the following parameters: electric field strength, conductivity of the atmosphere, ions concentrations and mobility, the volume density of the air.   It is shown that the results of calculations agree with data of observations.

Keywords: electrical parameters of troposphere, the conditions of "fair weather".

Fig. 8. Ref. 10.

Method of increasing the efficiency of the mapping radar and ground information. Zharashuev M. V., Gergokov A. K., Kagermazov A. Kh., Makitov V. S., Sozaeva L. T. Proceedings of MGO. 2018. V. 588. P. 139—149.

The article proposes a new concept, automatic comparison of radar and terrestrial information using a single network of certified meteorological stations of Roshydromet. An example of the use of this technique for a specific case, DMRL-S in Stavropol and Volgograd is given. Confirmed known and described new reasons for the discrepancy in the testimony of terrestrial and radar data.

Keywords: weather station, radar, automation, comparison, statistics.

Fig. 3. Ref. 7.

The emergence of foreing tropical species of aedes mosquitoes in the South of Russia – assessment of health risk, taking into account climatic and epidemiological factors. Yasjukevich V. V., Yasjukevich N. V. Proceedings of MGO. 2018. V. 588. P. 150—163.

In Russia (Black Sea coast of Caucasus) was discovered the yellow fever mosquito Aedes aegypti, and the Asian tiger mosquito Ae. albopictus. The advent of high performance of vector control tropical fevers creates prerequisites for occurrence of epidemic outbreaks of such dangerous diseases as yellow fever, Dengue fever, Chikungunya, zika on the territory of Russia. Existing climatic background to the spread on the territory of Russia Ae. aegypti and Ae. albopictus is currently not yet implemented. The risk of outbreaks of tropical fevers associated with Ae. aegypti and Ae. albopictus, is currently very small. In the future, as the possible implementation of climate prerequisites that contribute to the spread of mosquitoes of these species, the risk can increase significantly.

Keywords. Aedes aegypti, Ae. albopictus, arthropod-borne infections, climatic predictors, model the climate of the area, climatic scenario.

Fig. 1. Ref. 33.

In memory of I. M. Imyanitov. Mikhailovskii Yu. P., Kashleva L.V., Morozov V. N. Proceedings of the GGO. 2018. V. 588. P. 164—178.

The article is dedicated to the memory of the famous geophysicist I. M. Imyanitov, the researcher of atmospheric electricity, the developer of instruments and methods of measuring electric fields in the atmosphere and clouds. His role and importance in organizing research of the electrical properties of clouds are shown in the memoirs of his collaborators and followers. It is shown that some ideas and beginnings of I. M. Imyanitov continue to live and develop in the writings of his followers.

*Keyword*s: atmospheric electricity, clouds, measurement methods.

Fig. 6.

The article is devoted to the history of development of aerological observations in Russia. The role of the outstanding Russian geophysicist P.A. Molchanov, the creator of the world's first radiosonde, in the development of aerology is shown.

Keywords: aerological observations, radiosonde, measurement methods.

Fig. 11.