

Automation of Data Processing for Atmospheric Pollution Monitoring.

Polischuk A. I., Krisanov I. V., Ivanova N. N. Proceedings of MGO. 2021. V. 601. P. 7–18.

The ways of development of the system of automated processing of observation data on air pollution in cities are outlined as the computing means are updated. The creation of a distributed multi-level scheme for regular processing of information on the state of air pollution and its provision to consumers is shown. The development of a software package based on modern digital platforms using IT technologies based on classical client-server technology is considered in order to cover a wide range of users of the Roshydromet system.

Keywords: observational data, air pollution, processing system, IT technology

Tab. 1. Fig. 2. Ref. 9.

In search of the correlation between quasi-biennial atmospheric fluctuations and ozone concentration and temperature changes in Antarctica?

Frolkis V. A., Karol I. L., Kiselev A. A. Proceedings of MGO. 2021. V. 601. P. 19–34.

The correlation dependence between quasi-biennial oscillation at levels of 70, 50 and 30 hPa and the parameters of the Antarctic "ozone hole", as well as air temperature at 70 hPa over Antarctica, is estimated. Both classical correlation analysis and the Hilbert transform were used as a research tool. The results obtained indicate that the hypothesis about the possible existence of a connection between the QBO and the state of the Antarctic "ozone hole" with a high degree of probability has no basis.

Keywords: quasi-biennial oscillation, ozone hole, ozone column minimum, Hilbert transform.

Tab. 1. Fig. 6. Ref. 14.

Regional electronic climate guides for the Russian Federation regions adjacent to the Republic of Belarus. Razuvaev V. N., Korshunova N. N., Davletshin S. G., Kuznetsova V. N., Trofimenko L. T. Proceedings of MGO. 2020. V. 601. P. 35–45.

The paper sums up the efforts in creating regional electronic climate guides for the Smolensk, Pskov and Bryansk regions. These are included in the research «Development of the System of Providing the Population and Economic Sectors of the Russian Federation and the Republic of Belarus with Climate Services» that is performed under the Union State Programme «Development of the Union State Hydrometeorological Safety System». Steps of data preparation to calculate the tables of electronic scientific and applied guides for the regions adjacent to the Republic of Belarus are considered in detail. Regional guides are briefly described. Examples are given of presenting tabular data and analytical materials.

Keywords: specialized climate services, State Data Fund archives, electronic climate guide, climate information

Fig. 3. Ref. 7.

Stationary model of a current circuit taking into account the spatial distribution of thunderstorm generators. Morozov V. N. Proceedings of MGO. 2021. V. 601. P. 46–64.

Equations that describe a stationary, global current circuit in the atmosphere are formulated. An analytical solution that determines the potential of the electric field of the atmosphere in the form of the potential of the fair weather field and the potential of the field created by the total action of thunderstorm generators has been obtained for an atmosphere with exponential conductivity and taking into account the spatial distribution of thunderstorm generators. Using the obtained solution, the potential of the ionosphere which determines the global electrical properties of the atmosphere is calculated.

: *Keywords* current circuit model, stationarity, spatial distribution of thunderstorm generators, ionospheric potential.

Ref. 9.

Experimental data from thunderstorm systems. Snegurov A. V., Snegurov V. S. Proceedings of MGO. 2021. V. 601. P. 65–103.

Experimental data on the registration of lightning discharges by thunderstorm systems in the North-West and the center of the European part of Russia are presented.

Keywords: thunderstorm systems, efficiency, measurement errors.

Tab. 11. Fig. 13. Ref. 24.

Investigation of the intensity of the electric field of the atmosphere during thunderstorms. Kuzmin V. A. Proceedings of MGO. 2021. V. 601. P. 104–115.

Investigations of variations in the intensity of the electric field of the surface atmosphere during thunderstorms have been carried out. A comparative analysis of the data of the hardware-software complex for measuring the strength of the electric field of the atmosphere EFM550 and data on lightning discharges obtained by the LS8000 lightning direction finding network on days with and without thunderstorms has been carried out.

Keywords: lightning direction finding network, LS8000 lightning direction finder, atmospheric electric field strength meter, EFM550, electric field, meteorological phenomena, lightning discharges.

Tab. 1. Fig. 4. Ref. 10.

On the spatial evolution of the hail formation area in single-cell hail clouds.

Alita S. L., Appaeva Zn. U. Proceedings of MGO. 2021. V. 601 P. 116–125.

The article is devoted to the study of relationships between the parameters of the hail formation area (height, speed and direction of movement) in the phase of detection of the first radio echo and in the phase of hail generation and growth. The study was carried out on the materials of radar observations using the MRL-5 locator for the period from 2011 to 2020 at the research site of the High-mountain geophysical institute polygon.

As a result, a correlation was obtained between the heights of the area of hail formation in the phase of the first radio echo and the phase of hail growth, the most probable speeds and directions of movement of this area relative to the leading stream were identified, and the most probable time interval between the phase of detection of the first radio echo and the phase of hail growth was estimated.

Keywords: single-cell hail cloud, hail formation area, radar observations, leading stream, interval estimation.

Fig. 5. Ref. 5

The peculiarities of computerized system for sun-source calibration of actinometric reference instruments. Rodionov A. A., Dalyuk I. V., Emelianov A. N., Yakovlev V. S., Frolov D. V. Proceedings of MGO. 2021. V. 601. P. 126–135.

The system for calibration process significantly differs from other types of automated systems. The main feature of the system is that calibration is fulfilled by comparison of several instruments with reference actinometer using the sun as a source under natural conditions. The quality of the calibration depends on a lot of factors: the synchronous measurements of several instrument under test, the variability of the solar irradiance, environmental conditions, eventual changes of registered data. The digital processing is aimed at excluding of eventual factors and obtaining uniform data ready for evaluation of instrument metrological characteristics.

Keywords: metrology, actinometry, calibration, computerized system, solar irradiance, actinometers, pyranometers.

Fig. 4. Ref. 6.

Snow cover swamps of the Kola Peninsula. Kalyuzhny I. L. Proceedings of MGO. 2021. V. 601. P. 136–157.

Equations are formulated that describe a stationary, global current circuit in the atmosphere. For an atmosphere with exponential conductivity and taking into account the spatial distribution of thunderstorm generators, an analytical solution has been obtained that determines the potential of the electric field of the atmosphere in the form of the potential of the fair weather field and the potential of the field created by the total action of thunderstorm generators. Using the obtained solution, the potential of the ionosphere is calculated, which determines the global electrical properties of the atmosphere.

Keywords: snow cover forming, snow melting, swamp microlandscapes, the Kola Peninsula

Fig. 7. Tab. 7. Ref. 12.

Reflections on the book «Professor Alexey Feodosyevich Wangenheim. Chronicle of Dynasty hydrometeorologists». L. Kh. Ingel. Proceedings of MGO. 2021. V. 601. P. 158–161

Review of the book dedicated to the history of the USSR Unified Hydrometeorological Service formation and the memory of its organizer and first head A.F. Vangengeim.

Keywords: Dynasty hydrometeorologists, USSR Unified Hydrometeorological Service, history of the formation.

Fig. 1. Библ. 1.