Methodological guideline for weather and climate risk assessment and management and elaboration of adaptation measures with economic justification of their application in the economic and social spheres. Kobysheva N. V., Akentyeva E. M., Pigoltsina G. B., Klueva M. V., Razova E. N., Shanina I. N., Fasolko D. V. Proceedings of MGO. 2020. V. 598. P. 5–136.

The Guideline considers the methods for identifying, assessing and managing weather and climate risks in the sectors of the socio-economic sphere. The components of risks caused by dangerous hydrometeorological phenomena and slow onset events in agriculture, in the mountainous and piedmont regions of the Russian Federation, in Arctic zone and in coastal areas of seas, rivers, lakes are analyzed.

Various adaptation measures and approaches to uncertainty management when making adaptation decisions are discussed. Proposals for adaptation in the indicated sectors and regions of the Russian Federation are formulated, taking into account the assessments of weather and climate risks. The guideline includes the results of studies carried out in the several research institutes of Roshydromet.

Keywords: weather and climate risks, socio-economic sphere, climate change, dangerous hydrometeorological phenomena, adaptation

Tabl. 20. Fig. 19. Ref. 29.

On the predictability of large surface air temperature anomalies according to historical seasonal forecasts calculated using the CGCM GGO (T63L25 / INM RAS). Mirvis V. M., Meleshko V. P., Lvova T. Yu., Matyugin V. A., Baidin A. V. Proceedings of MGO. 2020. V. 598. C. 137–154.

The possibility of forecasting large surface air temperature anomalies (SAT) using seasonal hindcasts of 1979-2017 is investigated on the new version of the couple model of the atmosphere and the ocean (CGCM T63L25-MGO / CM4 - INM RAS). For five regions of Northern Eurasia and the Arctic, forecasts of anomalous events were considered, in which the negative or positive deviations of the SAT from the norm exceeded standard deviations over a large territory covering at least 30% of the region's area. It is shown that the success of forecasts of such events in general exceeded the estimates of a random forecast, with the best results obtained in forecasts of warm anomalies in summer.

Keywords: surface air temperature, large anomalies, coupled ocean-atmosphere model, skills of forecasts

Tabl. 2. Fig. 5. Ref. 11.

Network lidar AK-3 for middle atmosphere sensing: design, methods of measurements, results. Ivanov V. N., Zubachev D. S., Korshunov V. A., Sakhibgareev D. G. Proceedings of MGO. 2020. Vol. 598. C. 155–187.

Description of the network lidar AK-3 produced at RPA "Typhoon" for sensing of aerosol, ozone and temperature of the middle atmosphere at 308, 355 and 532 nm wavelengths is presented. Measurement of ozone concentration in 12-35 км layer is fulfilled at 308 and 355 nm wavelengths by differential absorp-tion method. Joint determination of the temperature and backscattering ratio in 30-70 km layer and also aerosol parameters in 10-30 км layer is produced at 355 and 532 nm wavelengths. Results of measurements by AK-3 lidar during 2012-2020 period are presented.

Keywords: lidar, middle atmosphere, aerosol, ozone, temperature, wave dis-turbances.

Tab. 3. Fig. 11. Ref. 15.

Results of statistical studies of the main characteristics of thunderstorm clouds based on radar observations. Appaeva Zn. Yu. Proceedings of MGO. 2020. V.598. P. 188–196.

The article is devoted to the refinement and addition of the previously created empirical model of single-cell hail clouds in the North Caucasus.

The distributions of the main radar parameters of single-cell hail clouds are presented, such as: the time of hail formation; the height of the origin of the first radio echo; excess of the origin of the first radio echo above the level of the zero isotherm; the height of the origin of the hail; excess of the height of the origin of hail above the level of the zero isotherm; the lifetime of single-cell hail clouds, as well as the speed and distance of their movement.

The data, on the basis of which the empirical model was refined, was obtained during radar observations at the High-Altitude geophysical Institute polygon in 2011– 019.

Keywords: radar, single-cell hail clouds, statistical studies, hail.

Tab. 2. Fig. 1. Ref. 12.

The cyclical nature of hail activity in the North Caucasus. Zharashuev M. V. roceedings of MGO. 2020. V. 598. P. 197–203.

Using the method of automatic identification of convective cells based on an experimental automated system for processing secondary radar information, radar survey files were analyzed in the period from 2002 to 2018. Despite all the heterogeneity of factors affecting the formation of convection processes in the study area, an attempt was made to generalize and identify common patterns in the cycles of hail activity in the North Caucasus.

Keywords: Hail, automation, statistics, meteorological radar, North Caucasus, MRL-5.

Fig. 1. Ref. 8.

Hail forecast by discriminates functions is proposed. The forecast is based on of predicted fields values of the atmospheric stratification (72 hours in advance), obtained on the global atmospheric model (GFS NCEP) for the meteorological station «Mineralnye Vody» in the Central part of the North Caucasus. The success of forecasts meets the criteria for the quality of forecasts, and keeps the forecast potential, despite to three days the advance time.

Keywords: hail forecast, validation, the output of the global model, the upper-air sounding, discriminant function.

Fig. 1. Tab. 2. Ref. 10.