Adaptation of Russia to climate change: a concept of the national plan. Kattsov V. M., Porfiriev B. N. Proceedings of MGO. 2017. V. 586. P. 7—20.

A concept is presented of Russia's National plan for adaptation to climate change.

Keywords: climate change, climate impacts, planning of adaptation.

Methodology of the weather and climate related risk assessment in the subjects of Russian Federation with the use of relational data base. Vasilev M. P., Kashirina E.V., Ivanova E.V. Proceedings of MGO. 2017. V. 586. P. 21—33.

The study considers development of relational data base using database management system Microsoft SQL Server 2014 Express with the purpose of the weather- and climate related risk assessment for the various economy branches. The data base includes information on frequency and intensity of the dangerous and adverse weather events in 1991-2015 that did damage to economy, and socioeconomic data (population density and gross regional product). The application of relational data base provides an opportunity to assess weather- and climate related risk for 85 subjects of Russian Federation and for economy sectors that produce the essential shares of GRP.

Keywords: relational data base, cluster analysis, weather and climate related risk, subjects of Russian Federation, economy sectors

Fig. 6. Ref. 18

Assessment of the weather and climate related risks for economy and social sphere at the regional level: the case of Krasnodar Krai. Vasilev M. P., Peters A. A. Proceedings of MGO. 2017. V. 586. P. 34—64.

The study presents the assessment methodology of the economic and social risks associated with the dangerous hydrometeorological events. The input data include meteorological and socio-economic indicators. By applying this approach the basic climate risks in the municipal units of Krasnodar Krai were identified, impact of current and future climate change on the risk value was analyzed, relevant adaptation measures were considered.

Key words: weather and climate related risks, adaptation, economic and social risk, dangerous hydrometeorological events, climate change in Krasnodar Krai Region.

Tab. 5. Fig. 8. Ref. 6.

Modeling of water balance components in the Central Asia region. Nadyozhina E. D., Sternzat A. V., Egorov B. N., Pikaleva A. A., Shkolnik I. M. Proceedings of MGO. 2017. V. 586. P. 65—79.

The numerical simulation results are analyzed by using of the model system containing regional climatic model (RCM) and meso–scale model of the atmospheric boundary layer (ABL). The temperature, moisture and evapotranspiration evolution is investigated in the arid and semiarid regions of Central Asia. The analysis shows that temperature and evapotranspiration spatial distributions match better with corresponding CRU data when the detailed description of the boundary layer structure is included in the design scheme.

Keywords: regional model, atmosphere boundary layer, evapotranspiration.

Fig. 6. Ref. 15.

Agroclimatic resources of the western agricultural regions of Kazakhstan. Baisholanov S. S., Pavlova V. N., Chernov D. A., Gabbasova M. S., Zhakieva A. R. Proceedings of MGO. 2017. V. 586. P. 80—92.

The article presents results on the evaluation of agroclimatic resources of the West-Kazakhstan and Aktobe regions. In the Aktobe region 5 agroclimatic zones, in the West-Kazakhstan region – 3 zones are allocated. The resources of solar radiation are sufficient for the life of agricultural crops and are more suitable for plants of a long day. The duration of the vegetation period ranges from 145 to 180 days. The sum of active temperatures above 10 °C provided for 90 % are 2270-3500 °C. The bioclimatic potential of the territory is 15-40 c/ha in the yield of spring wheat. Also, the territory of the two regions for climatic aridity of the vegetation period is divided into 3 zones: slightly arid, moderately arid, heavily arid.

Key words: photosynthetically active radiation, vegetation period, heat provision, moisture provision, agroclimatic zones, humidity index, sum of temperatures, bioclimatic potential, aridity of climate.

Tab. 2 Fig. 3 Ref. 12

Analysis of the development and interaction of cells in storm clouds. Abshayev A. M., Abshayev M. T., Adzhiev A. Kh., Sadykhov Ya. A., Chochaev A. B., Sinkevich A. A., Mikhailovskiy Yu. P. Proceedings of MGO. 2017. V. 586. P. 93—116.

The results of a complex study of a storm cloud with the use of radar, a system of lightning guidance and satellite measurements are presented. Particular attention is paid to the analysis and discussion of changes in controlled parameters during the "merge" of convective cells. The results of the analysis of the observed changes are discussed ambiguously. In most cases, after the confluence of the cells, a significant increase in the controlled parameters occurred. At the same time, the "merged" cells remained distinct and had foci of maximum reflection and dome-shaped peaks.

Key words: storm cloud, radar, lightning, precipitation, convective cells.

Fig. 5. Ref. 28.

Lightning location system. Snegurov A. V., Snegurov V. S. Proceedings of MGO. 2017. V. 586. P. 117—140.

The structure, functions and characteristics of Rosgydromet Lightning location system are shown.

Keywords: Lightning location system characteristics, lightning detection network structure, lightning position

Tab. 4. Fig. 11. Ref. 13.

Passive microwave radiometry from beginning to the contemporary satellite investigations. Melentyev V. V. Proceedings of MGO. 2017. V. 586. P. 141—163.

The paper contains a historical review of rise and the development of the satellite passive microwave radiometry revealing parameters of the system 'Earth-atmosphere' from the very beginning in the early 1960-s, when the possibility of microwave remote sensing (RS) was theoretically substantiated and proved by the outstanding Russian scientist □physicist–optician professor Kusiel S. Shifrin who worked at that time with the Voyeikov Main Geophysical Observatory, till nowadays. Some examples of new contemporary practical application of the satellite microwave survey in geophysics are described. The author had taken part in the majority of the presented and discussed studies, and some of them had been carried out in close cooperation with specialists from foreign countries including outstanding experts in RS from NASA as well as participants of the program 'Inter-Kosmos' (Bulgaria, Czechoslovakia, German Democratic Republic and Poland).

Keywords: remote sensing, brightness temperature, microwave radiometer, scanner-polarimeter, space meteorology, satellite microwave climatology.

Fig. 14. Ref. 30

The method of calibration of the locators, the network alert of storm. Zharashuev M. V., Makitov V. S., Kagermazov A. Kh., Kallie D. D. Proceedings of MGO. 2017. V. 586. C. 164—174.

The method of calibration of weather radars, which is based on the automatic comparison of the characteristics of clouds, located at an equal distance from the two locators. The main outcome of the study is development of a method to automatically improve the accuracy of measurement of meteorological parameters of clouds and to bring a unified reference value of the testimony of all the locators of the network. The novelty of the study is that the use of methods of identification of clouds for the adjustment of a permanent radar station.

Keywords: clouds, weather radar, precipitation, alert of storm, automation

Tab. 1. Fig. 2. Ref. 6.

Forecast of snowfall evaluations, arranged by using of WRF model in the north-west of the European Russia. Aniskina O. G., Volobueva O. V., Mostamandi S. V., Novikova N. A., Ryabinin V. S. Proceedings of MGO. 2017. V. 586. P. 175—190.

Results of the snowfall forecast evaluations, arranged by using of the WRF mesogrid numerical model, are represented. Criterions of the snowfall forecasting successfulness for the period from November to March 2010-2016 are calculated.

Keywords: Cyclone, model, forecasting, successfulness.

Tab. 3. Fig. 2. Ref. 19.

Evaluation of WRF physical parameterizations in simulating heavy rainfall events in southwestern Iran. Rusin I. N., Maddah M. A., Ahund-Ali A. M. Proceedings of MGO. 2017. V. 586. P. 191—204.

This study examines the impact of various Physical Schemes (PS) and their interactions on forecasts quality for daily heavy rainfall, adopting the Weather Research and Forecasting (WRF) model in southwestern Iran. To pursue this goal, 8 different combinations of PS for 6 selected dates (resulting in 48 total experiments) are considered. Using statistical indices, an evaluation is conducted of the performance and skill of each combination in each of the triply determined nested domains for different rainfall thresholds. As the result, the domain with 5-km spatial resolution (i.e. the first nested domain) is shown as the domain having least errors. Also the combination WRF5 gives better accuracy than other combinations for moderate and heavy rainfalls although the WRF model underpredicted values in this thresholds.

Keywords: WRF model, rainfall modeling, parametrization, forecast quality, southwestern Iran.

Tab. 4. Fig. 4. Ref. 25

On the method of monitoring data on the radiation balance components received on the Roshydromet network under the registration program. Lutsko L. V., Makhotkin A. N., Erokhina A. E., Bychkova A. P. Proceedings of MGO. 2017. V. 586. P. 205—233.

The method of monitoring monthly, daily and hourly amounts of the radiation balance and its components which is used to check the monthly data sets entering the MGO from the actinometric network. The description of the specialized control program (PO-K) which represents a monthly array of verifiable data in convenient formats for monitoring is presented.

Keywords: solar radiation, radiation balance components.

Tab. 4. Fig. 10. Ref. 14.

Using of the method of D. N. Lavrishchev for forecasting of radiation fogs at the airdrome of Ust Kamenogorsk. Volobueva O. V., Kok I. V., Novikova N. A. Proceedings of MGO. 2017. V. 586. P. 234—250.

Results of the calculations and quality evaluations for the forecasting of radiation fogs using the method of D.N Lavrishchev with usage of successfulness criterions at the airdrome of Ust Kamenogorsk for period of 2012-2016 are represented. Characteristic meteorological conditions for the radiation fogs formation of the examined territory are defined and the influence of local specifics over the fogs formation possibility was studied.

Keywords: Radiation fogs, forecasting, successfulness, method.

Tab. 6. Fig. 2. Ref. 10.

On the possible role of clouds in climate change present. Morozova S.V. Proceedings of MGO. 2017. V. 586. P. 251—260.

The article discusses the connection cloud - the temperature on the background of periods of climatic variability – the first wave of global warming, stabilization, the second wave of global warming. Examines the average annual amount of total cloud and total day and total night clouds separately. It is found that when a constant number of the long-term average octant total cloud cover (6.2 points), increasing the number of night cloudiness and reduced the number of day and night cloud is growing faster than daytime crashes. Formulated climatically meaningful conclusion about the role of daytime and nighttime cloudiness in the radiation-thermal regime, which makes the cloud a natural regulator of climate processes.

Key words: climate change, cloud mode, feedback cloud - temperature.

Fig. 3. Ref. 15.