

MGO atmospheric general circulation model (version MGO-03 T63L25). Meleshko V. P., Matyugin V. A., Sporyshev P. V., Pavlova T. V., Govorkova V. A., Shkolnik I. M., Baidin A. V. Proceeding of MGO. 2014. V. 571. P. 5—87.

The paper presents an updated version of the global atmospheric general circulation model which has been originally developed at Voeikov Main Geophysical Observatory. The model has been widely used in climate studies and weather forecasts for period from a week to a season. It has been also participated in a number of national and international intercomparison projects. The paper contains description of the model numerical algorithm and modified schemes of parameterization of some physical processes. In the new version vertical and horizontal resolution were increased, some improvements were also incorporated in parameterization of cloud-radiative interaction, land hydrology and boundary layer processes.

Keywords: global atmospheric general circulation model, climate studies, weather forecasts, description of the model numerical algorithm.

Tab. 1. Fig. 5. Ref. 72.

The influence of various variants of both two-phase stratospheric aerosol particles and their size distribution on optical parameters and radiative forcing. Frolkis V. A., Kokorin A. M. Proceedings of MGO. 2014. V. 571. P. 88—113.

The influence of size distribution and structure of stratospheric sulphate aerosol particles on its optical characteristics and radiative forcing is investigated. Particle structure is described by ratio of the total particle radius to its nucleus one, by the presentation of the particles in the form of particles with a precise or a diffuse boundary between the nucleus and shell, and particles with soluble nucleus. Various ensembles of the particles may lead to the greenhouse effect or the anti-greenhouse effect. In particular, if the average or effective radii of particles do not exceed 0.2 μm or 1.75 μm respectively, then, for example, anti-greenhouse effect occurs by the optical layer thickness of 0.05.

Key words: stratospheric sulphate aerosol, log-normal particle size distribution, two-layer, antireflection and homogeneous spherical aerosol particles, optical parameters of the ensemble of aerosol particles, instantaneous radiative forcing, ge-engineering.

Fig. 8. Ref. 32.

A System of Automated Calculations of Snow Water Equivalent Based on the Numerical Modeling and Standard Meteorological Measurements Data Assimilation. Kazakova E. V., Chumakov M. M., Rozinkina I. A. Proceedings of MGO. 2014. V. 571. P. 114—133.

The algorithms and results of testing of multi-layer model of snow cover (MMSC) for calculation of snow water equivalent (SWE) based only on the data of SYNOP code on snow depth, air temperature and humidity, wind speed, and precipitation are discussed. MMSC calculates daily the variations of SWE for each meteorological station located in the prescribed region of estimation. MMSC considers the main factors determining SWE, such as precipitation, compacting, melting, etc. A comparison with the hydrological snow survey data demonstrated a good reliability of calculations. High density of the meteorological stations network allows surely extrapolate the grid points calculations to vast territories. Technology is aimed to prepare SWE initial data for the numerical weather prediction objectives. It is also can be useful for assessment of snow water equivalent in the regions with sparse grid of snow surveys.

Keywords: snow water equivalent, snow density, synoptic measurements, automated technologies of weather forecast

Tab. 2. Fig. 3. Ref. 22.

An estimation of spatial and temporal distribution of drought in Ukraine during the vegetation period. Semenova I. G. Proceedings of MGO. 2014. V.571. P. 134—146.

Features of the drought distribution in Ukraine during the vegetation periods in 1995-2012 are investigated using drought indices SPI and SPEI. It is shown that the period from April to June is the driest in the main agroclimatic zones, with a high frequency of severe and extreme droughts. The most intensive and widespread seasonal droughts occurred in 2007, 2009 and 2012. Comparative analysis of drought indices in the spring-summer period with productivity of grain crops showed, that significant effect of drought on a crop formation appeared only in the Steppe zone.

Keywords: drought, drought index, vegetation period.

Tab. 2. Fig. 3, Ref. 12.

Estimation of space-time distribution yield of grains and Standardized Precipitation Index on satellite and land information. Kleschenko A. D., Savitskaya O. V. Proceeding of MGO. 2014. V. 571. P. 147—161.

Investigation results on the assessment of grain crops yield distribution on the regions of the Russian Federation by use of satellite information are presented. Method of transition from the values of vegetation index (NDVI) to the values of productivity in each point has been developed. This method allows to keep track changes in time and space of expected yields to identify regions with the abnormal conditions of crops development and to take immediate measures to improve them. Moreover, this approach allows to obtain a map of the mean values of crop yield on a district. The study of the possibilities of the standardized precipitation index (SPI) application for drought monitoring in the Russian Federation, as well as for the use of the obtained values of aridity in the complex assessment of the crop condition was carried out .

Keywords: the agrometeorological information, NDVI, grain crops yield, yield mapping, SPI.

Tab. 4. Fig.8. Ref. 9.

The penetration of nonstationary electric fields of ionosphere in lower atmosphere. Morozov V. N. Proceeding of MGO. 2014. V. 571. P. 162—171.

The problem of the penetration of nonstationary electric fields of ionosphere in the lower atmosphere is considered. Analytical solution of the problem is obtained in electrostatic current approximation and supposing of harmonic and spatial scale variations of the electrical potential of ionosphere. Numerical calculations of the electrical field strength near earth's surface are made by analytical solution. This calculations are showing the dependence of electrical field strength from frequency and spatial scale of variations of potential of ionosphere.

Key. words: atmospheric electricity, variations of electrical potential of ionosphere, electric fields in lower atmosphere.

Tabl. 2. Ref. 6.

Estimation methods of detection of meteoric echo. Basov I. S., Dorofeev E. V., Tarabukin I. A. Proceeding of MGO. 2014. V. 571. P. 172—181.

The coverage of a weather radar has areas of sustainable detection of meteoric echo and areas, in which it is impossible or has a low probability. Two area estimation methods of sustainable detection of meteoric echo are presented. This article presents example for the weather radar 700C.

Keywords: weather radar, detection of meteoric echo, estimation methods .

Fig. 3. Ref. 3.

Development of the design reference year for calculation of heat loss via buildings' underground part. Malyavina E.G., Ivanov D.S. Proceeding of MGO. 2014. V. 571. P. 182—191.

A method for development of the design reference year, which is used to determine the heat loss via buildings' underground part. The design reference year contains data of weather and solar radiation parameters for a cold season approaching minimum values. The design reference year is the initial climate data for calculation of the maximum (design) load on a heating system of an underground part of a building.

Keywords: air temperature, total solar radiation, wind speed, temperature of the coldest five days, relative temperature of the environment, transient thermal regime of the soil.

Tab. 3. Fig. 1. Ref. 5.

Study of changes in temperature and precipitation on the territory of Kazakhstan for the observation period from 1950 to 2010. Muratova N., Turebaeva S. I., Kauzov A. M., Aliyakbarova N. R. Proceeding of MGO. 2014. V. 571, P. 192—204.

The changes in temperature and precipitation on the territory of Kazakhstan for the period from 1950 to 2010. Coefficients of linear trends of air temperature and precipitation are calculated. Its statistical significance is estimated.

Keywords: temperature, precipitation, climate changes linear trends.

Tab. 2. Fig. 3. Ref. 12.

Possible criteria for quality control of solar radiation measurements. Gorbarenko E.V., Abakumova G.M., Letova L.I. Proceeding of MGO. 2014. V. 571. P. 205—220.

A possible way of using the results of long-term solar radiation observations to control current radiation measurements is shown for Moscow. Several criteria are selected to provide this control, namely: maximum and minimum sums of solar radiation, the ratio between the radiation balance components; empirical relationships between fluxes and factors determining their variability. The equations for calculations of limits for direct and total radiation in different Russian regions are presented.

Keywords: measurements, solar radiation , radiation balance components.

Tab.5. Fig.7.Ref.9.

Alexander Voeikov and his genealogy. Khairulin K. Sh. Proceedings of MGO. 2014. V. 571. P. 221—226.

A.I. Voeikov (1842-1916) a scientist of worldwide reputation, founder of the national and global climatology. The article highlights the little-known pages related to his pedigree since the appearance of his ancestors in Russia.

Keywords: Voeikov, genealogy, MGO.

Ref.3.