A B S T R A C T S

GEOLOGY

UDC 550.834+550.34.016+550.34.013.4

***D.A. Bezrodny**, PhD (Geology), Associate Professor,*
Department of Geophysics, Faculty of Geology,
Taras Shevchenko National University of Kyiv

FEATURES OF METHOD FOR DETERMINATION OF ELASTIC ANISOTROPY OF ROCKS FOR SOLVING THE PROBLEMS OF ACOUSTIC TEXTURE ANALYSIS

Features of method for determination of elastic anisotropy of rocks based on petroacoustic measurements are considered. The advantages of technology are analysed in comparison with other petrophysical methods. The methodics of quasi-lateral and quasi-transversal waves velocities measurements depends on rocks` anisotropy. Samples can have cylindrical, cubic or cubic-rhombic-dodecahedron form. It provides possibility to obtain comprehensive information about anisotropy of elastic waves in rocks, acoustic and elastic symmetry and texture.

As a result of experimental studying of velocities of volume elastic waves the following set of parameters is determined

- ❖ elastic constants;
- ❖ integral coefficient of acoustic anisotropy;
- ❖ parameters of acoustic linearity and schistosity;
- ❖ acoustic texture;
- ❖ acoustic tensor symmetry;
- ❖ parameters of azimuth anisotropy of elastic waves.

The method provides possibilities for acoustic texture and tectonofacing analysis of rocks, reconstruction of tectonic fabric and transformations. The method also solves other geological problems.

Keywords: anisotropy, elastic constants, tectonofacing analysis.

UDC 553.981:550.8

****O.L. Vasilenko**, Senior Researcher,*
****O.V. Bartaschyuk**, PhD (Geology), Chief of Department,*
*****V.V. Panasenko**, Chief of Department,*
******M.M. Zdorovenko**, Chief Geologist,*
**Ukrainian Research Institute for Natural Gases,*
***"UB Seismic Ukraine" Ltd,*
****"USEIS" Ltd*

THE ELEMENTS OF STRIKE-SLIP FAULT TECTONICS IN THE FORMATION OF EAST-MEDVEDOVSK STRUCTURAL HIGH

Features of geological structure of East-Medvedovsk structural high have been studied; evidences of strike-slip formation nature have been cited. A new type of traps belonged to salt strike-slip structures (SSSS) has been delineated in Middle Carboniferous strata.

The main structure-formation elements of East-Medvedovsk structural high are arc-like tectonic fault of reverse strike-slip type and system of arc-like and echelon faults. The process of its formation began at the end of Avilovsk time (late Pennsylvanian) in period of uplift movements of activated salt masses along thrust belt strike-slip zone under conditions of squeezing.

The main gas reserves of East-Medvedovsk gas field confined to salt strike-slip structure (SSSS), and concentrated in a trap of combined type with lithologic and tectonic sealing.

Results:

- East-Medvedovsk structural high - salt strike-slip structure (SSSS) that are genetically confined to squeezing zone and left-lateral strike slip.

- left-lateral strike slip was a channel of piercing activated Devonian salt that formed East-Medvedovsk stock.
- salt strike-slip structure has a hemi-brachyanticlinal morphology, complicated by echelon reversed faults, in cross-section it looks like – "flower".
- due to the new model of East-Medvedovsk gas field, hydrocarbon traps are concentrated in complicated combined traps, confined to salt strike-slip structure (SSSS).

Keywords: deposit, horizon, consediment washing away, trust, strike-slip, salt- strike-slip structure (SSSS).

UDC 528.8.04+556.3

***A.A. Klevcov**, PhD (Geology), Associate Professor,*
***S.I. Gorelik**, Postgraduate student, Assistant Professor,*
V.N. Karazin Kharkiv National University

THE REMOTE METHODS USING FOR LOCALIZATION ZONES OF UNDERFLOODINGS ON THE EXAMPLE OF THE KHARKOV REGION

Underflooding is led to numerous adverse processes, such as salinization, degradation of soils, sag of soil by internal erosion processes, etc. In the Kharkov region processes of underflooding have wide distributions. Sharing of remote and contact methods will allow to reveal in due time zones of underfloodings, to localize them and quickly to take protective measures. Remote methods allow to carry out quickly monitoring of underfloodings and to trace their dynamics. Contact methods don't possess the increased accuracy of delimitation of underfloodings, unlike remote which allow to allocate more exact contours of zones with the high levels of ground waters on indirect remote signs. In this regard timely tracking of dynamics of process of underflooding will allow to localize dangerous zones and beforehand to take protective measures that is an actual task today.

Keywords: remote sensing, salinization, contact methods, monitoring, underground waters, underflooding, soil, internal erosion.

UDC 550.341

***A.V. Loktiev**, PhD (Geology), Chief of Department,*
Ukrainian Research Institute for Natural Gases,
phone: +380675701307, e-mail: andriy_loktyev@ukr.net

PERSPECTIVES OF GAS PRODUCTION BY HORIZONTAL WELLS IN NEOGENE SEDIMENTS OF THE OUTER ZONE OF THE PRECARPATHIAN DEPRESSION

At present time increase of demand on natural gas makes researchers to look for new ways to discover deposits of hydrocarbons in sandy-clay neogene thicknesses of the Outer zone of the Precarpathian depression.

Torton-Sarmathian sediments of the Outer zone of the Precarpathian depression which are organic rich were estimated to be able to form 12 trillion m^3 of natural gas by the researchers of Ivano-Frankivsk oil and gas institute in 1970.

While research in Ivano-Frankivsk national technical university of oil and gas a conclusion has been made that inflows of gas can be received not only from sandstones but from clay sediments as well. The matter is that between sandstone layers there is a big amount of thin layers with defused psamit fraction which are poorly determined by well-logging. In case of good structural conditions gas bearing of such layers is formed. Underneath waters are present in such layers as well, that's why while gas production in the sand-clay thickness of the Precarpathian depression gas and after that gas with water is received. We advise experimental drilling of well X-Buts and its curving, starting from the depth of 1850 m and 200 meters in horizontal direction with every 25 meters hydrofracturing. Probable theoretic model proved on different gas fields and new deposits has been discovered even as a result of vertical drilling.

In case of success other thicknesses can be tested in the Outer zone of Precarpathian depression and Transcarpathian depression as well.

Keywords: thickness, psamits, gas natural.

UDC 551.14:550.42:552.3

***V.S. Lutkov**, Doctor of Sciences (Geology and Mineralogy), Senior Researcher,*
***V.V. Andreyev**, PhD (Geology and Mineralogy), Associate Professor,*
***A.V. Chuyenko**, Researcher,*
V.N. Karazin Kharkiv National University,
phone: +380577075459, e-mail: chuenko@hotbox.ru

MANTLE PLUMES AS POTENTIAL SOURCES OF ORE

The results of the study of the geochemistry of rare, precious, and ore elements of the mantle and complex deposits in several regions are reported.

The behaviour and occurrence forms of rare elements in mantle xenoliths and alkali-picritoids basites of Pamir and Tien Shan region have been studied. The problems of genesis of mobile belts and platforms (Tien Shan, Pamir, Ukraine, the Chukchi Peninsula) related to ultrabasites, mafic rocks, alkaline-ultrabasic rocks, their differentiates and products of hydrothermal-metasomatic processing have been considered.

Space-time, statistical and geochemical links in the distribution of trace elements in mantle and crustal formations have been established. The correlation between the type of matter of mantle metasomatites and general geochemical (metallogenic) specialization of the regions proved to be significant. These data confirm the influence of mantle melts (fluids) on the crust and ore geochemical processes.

The specific features of gold mineralization suggest that the mantle is the primary source of gold, and the formation of deposits is determined by prolonged migration of gold in the crust.

Keywords: mantle plumes, lithophile and chalcophile elements, mantle and mantle coronal field.

UDC 556.314

***O.A. Ostroukh**, Postgraduate student,*
Taras Shevchenko National University of Kyiv

QUALITY ASSESSMENT OF NATURAL PROTECTION OF GROUND WATER BY MEANS OF GIS

The article investigates the spatial assessment of natural groundwater protection based on GIS. Research and experimental studies were based on the software ESRI Arc GIS Desktop (Arc Map 10).

As a result of this work using streamlined methods V.M. Holdberha based raster digital elevation model, the depth of the groundwater layer thickness permeable sediments. Made total scoring, which determines the degree of groundwater protection alluvial deposits. Based on the joint consideration of capacity of the aeration zone and layer permeable sediments identified two categories of protected soil aquifer - not protected and conventionally reserved. From the combination of lithological and hydrodynamic characteristics determined by the ratio of areas with different levels of protection of groundwater: not protected - 71%, relatively protected - 29%.

Keywords: groundwater aquifers, security, scoping, raster model.

UDC 552.578

S.F. Poverennyi, Laboratory Chief,*
***A.I. Lurie**, Doctor of Sciences (Geology and Mineralogy), Full Professor,*
H.V. Poddubnaia, Engineer,*
**Ukrainian Research Institute for Natural Gases,*
***V.N. Karazin Kharkiv National University*

TO METHODOLOGY OF DETERMINATION OF ABSOLUTE GAS-PENETRABILITY DURING OPERATIVE TREATMENT OF STIPPLER

In the article the question of application of backpressure at determination of absolute gas-penetrability of standards of mountain breeds is considered in the process of operative treatment of core material of

searching and reconnaissance gassers. Reasons are shown, stipulating application of this methodical reception, a fundamental chart is offered and some structural ingredients of device, providing application of this methodology. Of particular interest is the question of determining the high permeability due to the heterogeneity of the manifestations of the structure of productive reservoirs caused by the presence of very high permeability layers in the thickness of relatively dense layer. Such layers, due to its high permeability to serve as a so-called "super collector", drain the main reservoir and provide a very high flow rates of the reservoirs with relatively low average permeability.

Keywords: researches of stippler, collector properties, absolute gas-penetrability.

UDC 551.35

***O.V. Polevich**, PhD (Technics), Leading Researcher,*
***A.V. Chuyenko**, Researcher,*
****V.A. Tsymbal**, PhD (Physics and Mathematics), Senior Researcher,*
**V.N. Karazin Kharkiv National University,*
***National Science Center «Kharkov Institute of Physics and Technology»*

APPLICATION OF X-RAY FLUORESCENCE ANALYSIS (XRF) FOR DETERMINING THE COMPOSITION OF SOLID GEOLOGICAL SAMPLES

The need to obtain information on the elemental composition of solids (including geological) objects has been grounded in the article.

Different versions of analytical definitions have been considered, demonstrating their inherent advantages and disadvantages. It has been pointed out that recently physical methods have advantages over traditional chemical methods in the practice of elemental analysis. This statement has been proved in the article. The choice of X-ray fluorescence analysis (XRF) has been comprehensively validated. The main factors that in aggregate determine the choice of an analytical method have been studied.

The thresholds defining various elements and other metrological characteristics used in the analytical practice have been suggested.

On the basis of analysis of the elemental composition method the article has concluded that considering such indicators as reproducibility and accuracy of measurements, X-ray fluorescent analysis is without equal.

The basic schemes of X-ray fluorescence analysis technical implementation have been offered. The advantages and disadvantages of each option of X-ray fluorescence analysis application have been described.

Keywords: X-ray fluorescence analysis (XRF), geological samples, the elemental composition of materials.

UDC 556.314.(477.54)

***V.M. Prybylova**, PhD (Geology), Associate Professor,*
V.N. Karazin Kharkiv National University

EVALUATION OF DRINKING QUALITATIVE COMPOSITION OF GROUNDWATER AQUIFERS MARLY CRETACEOUS SEDIMENTS IN THE KHARKIV REGION

The paper considers the problem of the quality of drinking groundwater Kharkiv region. Analyzed the quality of potable groundwater intakes Kharkiv region within the aquifer marly Cretaceous sediments. The comparison of values of the chemical composition of groundwater in aquifers marly Cretaceous sediments in the period of the intake with the standards GOST 2874-82 "potable water". This evaluate macro and micro component composition of the groundwater of existing withdrawals. The composition and concentration parameters of the chemical composition of drinking groundwater marly-chalk aquifer. We consider the chemical composition of drinking groundwater within nine fields of Kharkiv region with established reserves of groundwater, which exploit aquifer marly Cretaceous sediments.

Keywords: drinking groundwater, the qualitative composition, marly-chalk aquifer parameters of the chemical composition, macro and micro component composition, Kharkov region.

UDC 553.98:550.812+556.3

***V.V. Samoylov**, PhD (Geology), Sector Leader,*
***S.D. Pavlov**, PhD (Geology and Mineralogy), Vice Director,*
Ukrainian Research Institute for Natural Gases

ANALYSIS OF FLOODING WELLS ON KOROBOCHKINSKE FIELD BASED ON INDUSTRY-HYDROGEOLOGICAL STUDIES

These developments Korobochkynske field showed a large difference between the actual and approved gas reserves. On the basis of industrial-hydrogeological studies the analysis of flooding wells and reservoirs Korobochkynske field. The main purpose of industrial-hydrogeological studies is to determine the parameters of water usage wells. Water regime of the wells - change over time component composition and volume of water passing concomitant with production wells during the development of deposits. It has its own stages, determined the number of concurrent water and its component composition. Research conducted using compact separation units include data from industrial research and sampling related treatment. Found that most of the wells are in flooding. The recommendations on the overhaul of wells. But the overhaul should be preceded by geophysical surveys and analysis of the geological model of hydrocarbon deposits in these wells.

Keywords: industrial-hydrogeological studies, flooding wells, passing the fishing waters.

UDC 502 (477.75):624.131.22

S.K. Sukhoruchenko, Engineer Geologist,*
***V.Yu. Gricyuta**, Engineer,*
**Private enterprise «INSTITUTE «KRYMGIINTIZ»,*
***V.N. Karazin Kharkiv National University*

SHAPING OF THE LOWER CRETACEOUS CLAYS CRIMEA UNDER INFLUENCE NATURAL FACTOR

In article are considered natural factors influencing upon ecological-geological condition of the lower cretaceous clays. To he pertains: geological construction, geomorphology, climate, hydrology, hydrogeology, vegetation, exogenous geological processes. Five varieties stand out amongst clays on lithology composition. The lower cretaceous clays occupy the area in 910км^2 and wide-spread on territory with it is enough strong horizontal dismemberment reaching 14км/км^2. The climate of the territory of the spreading lower cretaceous clays is characterized drought and so here dominates physical weathering, reaching 1-6м in depth. Erosion process - a dominant process of the lower cretaceous clays. Weathering and waterlogging worsens the ecological-geological condition of the clays for count of the reduction deformation and strength of the features on 10-30% and increase swelling on 35-70%. Underground water and clays possess corrosion characteristic, under than most aggressiveness exists in east part of spreading lower cretaceous clays.

Keywords: Crimea, lower cretaceous clays, physic-mechanical factors, corrosion, seismicity.

UDC 550.84:550.42:546.02

V.G. Suyarko, Doctor of Sciences (Geology and Mineralogy),*
Full Professor,
***S.V. Krivulya**, Director,*
**V.N. Karazin Kharkiv National University,*
***Ukrainian Research Institute for Natural Gases*

CARBON ISOTOPES OF METHANE AS A CRITERION FOR RESEARCHES OF HYDROCARBON ACCUMULATIONS

The possibilities of using carbon isotopes for determination of methane generation sources and hydrocarbon travel path in the lithosphere are considered. Correlation of isotopic $^{12}C/^{13}C$ give to possible recommend parameters to the deposits of oil and gas and to create the grounds special- genetics their models. Isotopic research on different regions to designate, give important information about methane of productive deposits, disperse methane and methane of deep crusts. Isotopic composition of carbon point on their genetics

forms – organics ore metamorphic. That researches perhaps give potential fore ventilation of inquire about gas Shebelinka deposits.

Was proved, but isotopic contain of carbone is important criterion of exploration hydrocarbons in earth depth.

Keywords: isotope of carbon, hydrocarbons, thermocatalytic transformation, the source of generation, migration path.

UDC 553.98:477.53

***V.A. Tereshchenko**, PhD (Geology and Mineralogy),*
Full Professor,
V.N. Karazin Kharkiv National University,

THE PERSPECTIVES OF ASSIMILATION OF UNCONVENTIONAL GAS RESOURCES AT EXPLOITING GAS FIELDS OF DNIEPER-DONETS TROUGH

The possibilities of extracting of unconventional gas resources at some exploiting gas fields at Dnieper-Donets Trough has been analyzed. The distribution of combined unconventional (shale, central basin, coal) gas in tight reservoirs of Carbon at the zone of deep catagenesis on reasonable depths has been shown.

At Shebelinka gas field combined unconventional gas is spread in tight reservoirs of Middle and Lower Carbon representing by gas generating coal-bearing series at the depths of 3,8-6,0km. The tight rocks of Middle Carbon are perspective at other gas fields of central zone at south-east of Dnieper-Donets Trough. At Berezovskoye gas field combined unconventional gas is distributed in tight reservoirs of Lower Serpykhov layer at the depths of 4,5-5,2km.

Keywords: unconventional gas, gas producing formation.

UDC 550.4:631.41

****F.V. Chomko**, Associate Professor,*
*****V.V. Chaban**, Engineer,*
**V.N. Karazin Kharkiv National University,*
***DP "GGRES Saki",*
phone: +380957054537, e-mail: vic_84@list.ru

GEOCHEMICAL FEATURES OF GEOLOGICAL ENVIRONMENT IN THE SARSKAY SALT LAKE

The results of the analysis of the formation of the geochemical features of the geological environment in the context of technological transformation within the catchment area of Saki Salt Lake. The regularities of the distribution of contaminants in the soil of the study area. The analysis of the formation of the geochemical features geological environment showed an uneven distribution of man-made pollutants in the study area. Distribution of the latter depends on the distance from the source of contamination of, geomorphologic parametric ravine network and the structural properties of the soils. The following is a detailed analysis of the distribution pollutants.

Keywords: geological environment, man-made pollutants.

UDC 552.5(477.5)

***Ya.S. Shmorg**, Postgraduate student,*
Institute of Geological Sciences of NAS of Ukraine

LITHOLOGICAL CHARACTERISTICS OF SHALE, MUDSTONE YULIEVSKO SKVORTSOVSKY ZONE WITH OIL AND GAS PRESENCE

The paper considers lithofacies' characteristics and trends of sedimentation of the lower- middle Carboniferous deposits in the central part of Northern shoulder (margin) of Dniepr-Donets Basin. On the ground

of lithogenetic studies of core material, facial types of Visean, Serpukhovian deposits of lower Carboniferous and Bashkirian deposits of middle Carboniferous as well as their genesis are defined.

On the ground of integrated studies of lithofacies, XRD and TOC analyses of the lower-Serpukhovian and upper-Visean argillaceous deposits, an appraisal of prospects for finding new hydrocarbon traps in these shales had been made. On the base of a lithogenetic study of core,the main facial types of the Visean deposits have that their spread on area and section changed very much during the Visean time.

Keywords: Dniepr-Donets Basin, lower-Serpukhovian argillaceous shale of Carboniferous, lithology, facie, presence of oil-and-gas.

UDC 504.556

***V.V. Yakovlev**, PhD (Technics),*
Kharkov national academy of municipal economy

HYDROGEOLOGICAL AND TECHNICAL ASPECTS OF THE DRINKING WATER CAPTATION IN THE CASES OF EMERGENCY

The most reliable sources and easy ways of the drinking water supply organization in the cases of emergency are considered. As the sandy terraces in the Ukrainian river valleys are widely spread in the cases of emergency connected with the traditional drinking water supply system collapse because of the surface and near surface water pollution and also with the possible continuous electric irregularity it is reasonable to consider the underground waters of the second water horizon from the surface of the sandy river terraces as the most important source of the drinking water. The hydrogeological location substantiation and technical design substantiation of the self-emission wells in the bottom of the sandy river terraces are given. There are some organization recommendations concerning the water supply service improvement in the case of emergency.

Keywords: drinking water supply, captation, cases of emergency, sandy river terraces.

GEOGRAPHY

UDC 911.3

***Ja.V. Vasylevska**, Postgraduate student,*
V.N. Karazin Kharkiv National University

REGIONAL FEATURES OF SANATORIUM-RESORT ECONOMY OF UKRAINE

The article deals are regional features sanatorium-resort economy in Ukraine.

The basic theoretical concepts of this research are given. Types of sanatorium-resort facilities are identified.

The prerequisites of the establishment of sanatorium-resort economy are given. Availability of natural resources and the environment as the basis of its formation is proved.

Provision mineral waters, especially their composition and deployment on the territory of Ukraine are described and analyzed. Balneologic resources, their classification and properties, distribution on the territory of Ukraine are considered. Climatic resources of the Ukrainian regions are characterization. The distribution of natural and anthropogenic resources is given.

The size and structure of the sanatorium-resort facilities of Ukraine is represented.

Features of the accommodation and the functioning of the children's summer camps in Ukraine are presented.

Features of the accommodation on the territory of Ukraine sanatorium-resort facilities are considered. Provision of Ukrainian regions sanatorium-resort facilities (based on the population and territory) are designed. Regional features in the provision of them are identified and analyzed.

The problems and prospects of development of sanatorium-resort facilities in Ukraine are given.

Keywords: sanatorium-resort economy, sanatorium-resort facilities, resources by sanatorium-resort economy, climatic resources and natural, provision sanatorium-resort facilities.

UDC 504.55.054:662 (470.6)

V.I. Golik, Doctor of Sciences (Technics), Full Professor,*
***O.N. Polukhin**, Doctor of Sciences (Politics), Full Professor,*
***A.N. Petin**, Doctor of Sciences (Geography), Full Professor,*
**Center for geophysical research VSC RAS,*
***The National Research University "Belgorod State University"*

QUALITY EXPLOITATION OF MINERAL RESOURCES

The problems of optimization technologies of underground mining KMA. Established that the quality characteristics of subsoil use, productivity and economic performance of enterprises there is an equivalent ratio, which is the basis for the management of full exploitation of mineral resources. It is shown that the decrease in dilution upgrading traditional technologies ore mining is an important way to increase the efficiency of mining. Optimization technology of underground mining of iron ore deposits of the Kursk Magnetic Anomaly location requires comprehensive research that differ from previously known estimate of the possibility of using the tails of ore processing to control the state of the ore bearing arrays while preserving the earth's surface as a priority condition for protection of the environment, as well as obtaining an additional source of funds to increase the volume of production while improving the quality of ore exploitation of mineral resources.

Keywords: technology, design, metal ore dilution, loss, economics, waste, tailings, equivalent ratio, the exploitation of mineral resources, the efficiency of production.

UDC 911.3

***V.V. Grushka**, Postgraduate student,*
V.N. Karazin Kharkiv National University

SOCIAL-GEOGRAPHIC ANALYSIS OF SOCIAL-ECONOMIC DEVELOPMENT OF THE DNEPROPETROVSK REGION

The article considers results of the factor analysis carried out on set of statistical indicators which characterize various components of social-geographical process. It is found that the condition of social-geo system is determined by the following factors: social-demographic, social-economic, morbidity and mortality. The first factor has positive influence, all others – negative. The main problems of social-economic development of the region are linked with unemployment, health care and environment condition. Regional state of social-geosystem determined by the following factors: socio-demographic, socio-economic, factors of mortality and morbidity. Of these, only the first is positive, indicating that many of the problems in the region associated with unemployment, health and the natural environment.

Keywords: social-geosystem, social-geographical process, factor analysis, regional problems.

UDC 551.577.2

***T.E. Danova**, PhD (Geography), Associate Professor,*
***T.L. Kasadjik**, Postgraduate student,*
Odessa State Environmental University,
phone: +380506609538, e-mail: danova8@mail.ru

SPATIAL AND TEMPORAL DISTRIBUTION OF THE RAINFALL ON THE TERRITORY OF UKRAINE IN THE CONDITIONS OF CONTEMPORARY CHANGING OF THE CLIMATE

There are some investigations of spatial and temporal distribution of the statistical characteristics of the rainfall and the number of days with rain and snow, for forty years. Since 1980 there have been exposed a consistent downward trend in the number of days with rain, and since 2001 until 2010 a significant reduction in the number of days with snow. This dynamic is a result of climate changes and transformation not only the fields of air temperature in the region, but also the moisture content in the troposphere. This obtaining negative anomalies data indicate to a very dangerous sign for various branches of national economy, because the snowpack is the major source of soil moisture for steppe and forest-steppe regions of Ukraine. The most necessary and indispensable requirements of steady economic development is timely monitoring of the current state of quality and quantity of precipitation on the territory of Ukraine.

Keywords: rainfall, the frequency of rain and snow, the statistical characteristics of the anomalies.

UDC 911.3

***N.V. Dobrovolska**, Postgraduate student,*
V.N. Karazin Kharkiv National University

THE MAIN DIRECTION OF INCREASING PRODUCTIVITY OF AGRICULTURAL LAND IN THE PLANT GROWING ASPECT OF KHARKIV REGION

The article is devoted to the topical issue of searching the ways of improving the productivity of agricultural land in the plant growing aspect of Kharkiv region.

The percentage of arable area in Kharkiv region indicates an extremely high level of land use for the purposes of crop, accompanied by continuous depletion of natural resources, gradual decline of fertility and productivity of agricultural land.

Therefore, the article analyzes a dynamics of the number of crop production in farms of all categories, a crop production per capita and the application of mineral and organic fertilizers in nutrients in the crop area of Kharkiv region. A special attention is drawn to the spatial characteristics of mineral and organic fertilizers at the agricultural enterprises in districts of Kharkiv region. With the help of obtained parameters is analyzed the current level of productivity of agricultural land at the regional level.

The increase in productivity of agricultural land is also affected by the use of innovation in agriculture. The article is considered the latest farming systems and outlined some aspects of the development and application of new technologies for growing crops. An implementation of the proposed innovation in agriculture is also one of the ways of increasing the productivity of agricultural land.

Keywords: land resources, land fund, agricultural land, land use, optimization of the structure of agriculture, productivity, the cropping system.

UDC 911.3

***P.A. Kobylin**, Postgraduate student,*
V.N. Karazin Kharkiv National University,
phone: +380963751591, e-mail: kobilin3@rambler.ru

THE PLACE OF KHARKIV REGION IN THE SECONDARY EDUCATION SYSTEM OF UKRAINE

The article analyzes the place of Kharkiv region in the secondary education system. The definition "secondary education" according to the law of Ukraine "About secondary education" is presented, it is considered as purposeful process of mastery by knowledge about environment, the structure of the secondary education includes schools, gymnasiums, lyceums, rehabilitation centers. The dynamics of the population fertility in Ukraine and in Kharkiv region during 1995-2011 is shown, it had been reducing until 2001 and since 2002 the fertility has been increasing; the level of the fertility in Kharkiv region is lower than the average Ukrainian indicator. The dynamics of a number of pupils in secondary educational institutions during 2005-2011 in Ukraine and in Kharkiv region are analyzed, it shows the decreasing of their number. The reduction of a number of pupils influences the decreasing of a number of second and third degree school graduates, a general number of secondary educational institutions and teachers there. To determine the place of Kharkiv region in the secondary education system of Ukraine 5 indicators on regions of Ukraine has been selected: a number of secondary educational institutions; a number of pupils there, a number of pupils who graduated from the second degree school, the third degree school, a number of teachers per 1000 population. Each indicator has been ranged, assigned a rating, the total rating has been calculated which is 110 for Kharkiv region, this is the 23th place among the 27 regions of Ukraine.

Keywords: secondary education, educational institution, fertility, ranking indicator, social infrastructure, the second degree school, the third degree school.

UDC 551.4:531.5

***Yu.F. Kobchenko**, PhD (Geography), Associate Professor,*
***O.Yu. Kobchenko**, MSc (Physics and Mathematics),*
***V.A. Rezunenko**, PhD (Physics and Mathematics), Associate Professor,*
V.N. Karazin Kharkiv National University

WATERBALANCE METHOD IN PHITOCLIMATE RESEARCH

The methodology questions of the phitoclimate research are examined. The role of the balance method of research in the processes of steady and estimation of the water resources shown. The degree of territory dampen of basin Sev. Donets taking into consideration of climate change by the method of balance calcilation is determined. For the investigation of the appropriateness of water circulation in the basin Sev.Donets by waterbalance method it was revealed the following: the receipts part of the water balance decreased and expenses part, especially evaporation increased because of the constant changes climate in the global scale and in particular the getting warmer of climate at the regional level. There is reason to believe that the total water resources of the study area during the last period are decreased.

Keywords: waterbalance method, phitoclimate research, climate change.

UDC 911.3

***G.O. Kulieshova**, PhD (Geography), Associate Professor,*
V.N. Karazin Kharkiv National University

THE REGIONAL FEATURES OF SMALL BUSINESS IN UKRAINE

In recent years is observed the decrease in the number of small businesses in Ukraine, due to the political and economic reasons. Kyiv is the leading city by the number of small businesses, in Odessa, Kharkiv, Kyiv and Zaporizhia regions and in the city of Sevastopol the quantitative indicators of small businesses are above the average level. The majority of small businesses are in the service sector, particularly in trade. A significant reduction of small businesses employees in 2011 compared to 2007 was in such fields of industry as agriculture, hunting, forestry, and construction.

We conducted a ranking of Ukrainian regions in terms of the average monthly wage of employees of small businesses, the level of sales and financial results. It was found that industrialized eastern regions of Ukraine are far below the central and western regions by the share of products sales in total sales. The research of small business in Ukraine revealed the significant regional differences in key performance indicators of small businesses. Based on the rankings we grouped the regions of Ukraine with high, above average, average and low level of small business development. The leaders in the development of small business is Kyiv, Dnipropetrovsk and Donetsk regions.

The paper outlines the problems and prospects of business in Ukraine due to the fact that the level of small business development largely depends on the overall socio-economic situation and standard of living as the main goal of business is to ensure sustainable growth of the middle class society.

Keywords: small business, small enterprises, regional features.

UDC 911.3

***V.F. Lihvan**, Postgraduate student,*
V.N. Karazin Kharkiv National University

AN ANALYSIS OF THE CURRENT PROBLEMS AND PROSPECTS OF THE AGRICULTURAL COMPLEX IN KHARKIV REGION

The article reveals the features of the current problems and prospects of agriculture in Kharkiv region. An actuality of this topic is due to the current state of agriculture in the region and its negative trends. The sophisticated agro-climatic resources, a poor financial support from the government, an unstable economic situation in the country and unfavorable membership in the World Trade Organization – is only few causes of negative trends in the agricultural sector in Kharkiv region.

In recent years, in the agricultural production of Ukraine is observed the intensification of the crisis: the decrease amount the gross production, a degradation of natural resources, the decrease of soil fertility and deepening imbalance between crop and livestock. A reducing of livestock numbers has reached a critical point with a significant reduction of its productivity. Almost in all the sectors of agriculture has observed a gradual degradation, affecting not only to the economy, but also weakens the trade position of Ukraine in the global market. Kharkiv region in this aspect also has the significant problems that leads to the relevance of this issue.

Despite the existence of all the problems and threats, compared with the other regions of Ukraine, Kharkiv region has certain advantages in the development of agriculture. Especially it concerns the development of modern industry which has a high level of the development.

Keywords: agribusiness, agriculture, agricultural products, agricultural enterprise, profitability.

UDC 911.3

***L.N. Niemets**, Doctor of Sciences (Geography), Full Professor,*
***K.Yu. Segida**, PhD (Geography), Assistant Professor,*
***E.A. Zabirchenko**, MSc (Geography),*
***L.V. Klychko**, PhD (Geography), Associate Professor,*
V.N. Karazin Kharkiv National University

MUNICIPAL HOUSING AS A COMPONENT OF SOCIAL INFRASTRUCTURE (BASED ON AN EXAMPLE OF THE RURAL AREA OF DONETSK REGION)

This article deals with the modern trends of the functioning and territorial characteristics of municipal housing as a component of the social infrastructure in rural areas of a region. The characteristic of municipal housing in Donetsk region is given. Indicators of housing supply, water and sewerage networks supply, gasification supply have been analyzed; indicators of social protection, features of the consumer market, as well as the structure of retail trade and restaurant business in rural areas of Donetsk region have been considered.

For the last years a number of Donetsk's villages that are provided by a water network has been increased that which has a positive impact on rural development. The problem of the state of water, sewerage networks and facilities that serve them is particularly acute in Novoazovsky, Mariynsky, Starobeshevsky districts and some other areas. A number of gasified villages is growing every year, which positively influence the rural development.

Analyzing the trade in rural areas the retail trade turnover as a basic indicator is taken which is defined as a volume of the consumer good sails to the population through the retail trade network, the catering network regardless of ownership, this is a sale by the trade network to foodstuffs institutions, organizations, enterprises for meals served their consumers.

In rural areas such municipal service like garbage disposal is almost completely absent, residents often resolve this issue, cleaning, cutting trees and other services are carried out at the so-called "Saturdays" by village organizations.

Keywords: municipal housing, social infrastructure, rural area, housing supply, gasification, water and sewerage network, the consumer market.

UDC 911.3

***V.V. Pankratieva**, Postgraduate student,*
V.N. Karazin Kharkiv National University

THE DEMOGRAPHIC SITUATION IN LUHANSK REGION AS A FACTOR OF THE EDUCATION SYSTEM DEVELOPMENT

The demographic situation is one of the most important factors in the development of a regional system of education. The level of education in the region depends on the demographic parameters of natural and mechanical movement of the population. Luhansk region ranks the seventh place among the regions of Ukraine by the population. The most urbanized are the southern districts. A large number of small towns is a characteristic feature of the region.

The population decline is observed in Luhansk region. The reduction in the number of residents in the region are higher than the national rate. Recently, an increase in the birth rate is observed. One of the challenges in modern society is the demographic distribution of illegitimate birth, it's growth and distribution in the Luhansk region is quite significant, especially in rural areas. The mortality rate of the population in Luhansk region tends to decrease. Generally in Luhansk region there is a natural decline in population due to the prevalence of mortality over the birth rate.

An increase in fertility affects on the preschool and secondary education. Current state of vocational and higher education in the region depends on the migratory activity of the population. Therefore the problem of optimizing the territorial organization of the education system in Lugansk region must be resolved on the basis of socio-geographical features of the demographic situation in the region.

Keywords: fertility, mortality, natural increase of population, migration, education system.

UDC 911.3

***T.G. Pogrebskyi**, Postgraduate student,*
V.N. Karazin Kharkiv National University

THE CURRENT MEDICAL-DEMOGRAPHIC SITUATION IN VOLYN REGION

In modern conditions of the reorientation and the formation of a new national strategy, aimed at the development of human potential, combined with unfavorable demographic trends of the reproduction in Ukraine, the relevance of demographic researches of society is increasing.

A health of the population is an indicator of socio-economic development, an integral part of the level and quality of life in the country. The current economic situation in Ukraine and its regions characterized by the dramatic changes in all spheres, including health care, from effectiveness of which depends the health of nation.

A regional differentiation of the demographic situation in Ukraine is due with a set of socio-economic, political, environmental and other factors, in a regular, long-term or temporary effects.

Volyn is one of the eights regions in Ukraine where the natural population growth is observed. In 2011 the population of Volyn region has increased by almost 1.5 thousand people. The birth rate in the region was 14.1 per thousand inhabitants. The mortality rate was 13.3 per 1000 residents. The intensity of natural increase in 2011 was 0.8 persons per 1000 inhabitants.

As follows, Volyn region is one of the most stable as to demographic development. It is still a region of natural reproduction. To maintain the current situation and to promote the further development of medical and demographic situation in the region, the government needs to implement a series of measures aimed at promoting fertility, protect and preserve the health of children, promoting the welfare of families and young people.

Keywords: medical-demographic situation, birth rate, death rate, natural increase, morbidity.

UDC 911.3

***I.O. Polevich**, Junior Researcher,*
V.N. Karazin Kharkiv National University

CONDITIONS TO ESTABLISH A MECHANISM OF REGIONAL ENVIRONMENTAL INNOVATION

The article deals on the search of new solutions for the formation of the principles of sustainable development. The analysis of the current situation, which allows to identify priority deserving of state support the direction of innovation and investment.

It is noted that support for projects to develop clean technologies in the production, processing and use of natural resources will not only stop the wasteful attitude, but also cost-effective, providing employment and additional income from the sale of the domestic and foreign market products deep processing of raw materials.

Indicated that the transition of the economy to the new conditions of management requires improvement of management cycle of STP (Science - Technology – production) mainly based on the use of economic methods, the starting point of which must be the development of an integrated methodology for the use of scientific and technological progress in production.

Defined tools integrated approach to the process.

It is concluded that the implementation of the above conditions will contribute to the creation of a mechanism for effective use of environmental innovation in the workplace. Such a system will enable the organization to create high-performance environmentally safe production, organizational and economic advantages which make it possible to implement an integrated approach to managing them.

Keywords: environmental innovation, the region, the cycle of STP (Science - Technology - Production), high technology, innovation.

UDC 551.524.3 ***S.I. Reshetchenko**, PhD (Geography), Assistant Professor,*
V.N. Karazin Kharkiv National University

RESEARCHES OF THE WIND MODE IN THE TERRITORY OF THE KHARKIV AREA AT THE BEGINNING OF THE XXI CENTURY

Large-scale atmospheric circulation forms different spatial distribution of anomalies of air temperature and an amount of precipitation on the globe, and also regional circulation. It is known that regional circulation which covers the territory of Ukraine at the beginning of the XX century, differs from circulation of the atmosphere of the last decades. The wind mode of the territory which is characterized by the direction and wind speed is indicative, is responsible for heat and moisture distribution. It also depends on physiographic conditions of the area. Therefore the analysis of characteristics of a wind at the meteorological Raisin station during the period of 2001-2011 was carried out. During realization of these tasks results of supervision of average daily values of air temperature, the direction and wind speed were used. Temporary dynamics of the wind mode in separate years in the conditions of modern climate is revealed. The made analysis showed that repeatability and speed of northern northeast wind in the winter became less. Within a year the southeast and southwest wind which brings positive air temperatures became prevailing.

Keywords: wind mode, wind direction, speed, air temperature, atmosphere circulation, modern climate.

UDC 911.3 ***K.Yu. Segida**, PhD (Geography), Assistant Professor,*
V.N. Karazin Kharkiv National University

THE RESETTLEMENT OF POPULATION OF THE KHARKIV REGION: TERRITORIAL ASPECT

The article deals with characteristics of the territorial population distribution of the Kharkiv region. The general characteristic of the population settlement of the Kharkov region are given. The population density by administrative districts of the Kharkiv region is calculated and analyzed. The index of population concentration are reduced and characterized. The application center-graphical method by territorial characteristics in the research of population settlement is founded. The methodical foundations spatial-statistical analysis of population distribution is shown. The arithmetic mean, median and modal center and center of population gravity are calculated. Theirs contents and meanings are given. The results are displayed cartographical.

According to the research the uniformity degree of population distribution in the region and its density, their territorial differentiation (including – In rural and urban settlements) are defined. The historical process of populate the territory and environmental conditions have had a significant impact on the spatial distribution of settlements. The population is concentrated in the central area and near the regional center. This is due to several reasons such as the availability of jobs, developed educational and scientific spheres, economic and social development of the region, the presence of functioning cultural institutions, provision of social services and their diversity. These and other factors led to the attraction of people to the regional center and its suburban areas. The Kharkiv regional system of settlement is monocentric, has a network of cities as almost formed agglomeration centered in Kharkiv city. The spatial and statistical features of the population distribution on the territory of the Kharkov region are identified and analyzed.

Keywords: the resettlement of population, population density, an index of population concentration, distribution centers of population.

UDC 911.3

***E.Yu. Telebeneva**, Postgraduate student,*
V.N. Karazin Kharkiv National University

THE FEATURES OF INDUSTRY IN KHARKIV REGION: SOCIO-GEOGRAPHICAL ASPECT

Socio-geographical features of industry in Kharkiv region is an important issues of the scientific research.

Industry - is the most technologically advanced sector of material production, the basis of the industrialization of economy, which has a decisive influence on the development of the productive forces. It includes a set of enterprises for the production of electricity, work equipment for industries, extraction of raw materials, fuels, logging and processing of the products produced or manufactured by industry in agriculture, mining and processing of raw materials, production of goods and services.

Kharkiv region is one of the most industrialized regions of Ukraine. It takes the 5th place in the field of industry in the country's GDP. 667 industrial enterprises are concentrated in Kharkiv region, where 234 thousand people are working.

The leading role is played by engineering, metalworking, building materials industry, power industry, pharmaceutical industry, food and light industry. The products of Kharkiv enterprises are supplied in Ukraine and abroad.

Kharkiv region has a high level of economic development, due to favorable economic and geographical position. For specialized industries Kharkiv region is divided into three industrial districts: Central, Eastern and Southern.

Today Kharkiv region is one of the most developed industrial centers of Ukraine, where the leading role is played by the machine building and metalworking, energy and military-industrial complex. It is defined by its strong scientific and technical potential, widely ramified network of higher, secondary and special schools. All this determines the relevance of further study of industry in the region.

Keywords: industry, industrial district, Kharkiv region, enterprise economics.

UDC 622.271.4(477.62)

***I.G. Chervanyov**, Doctor of Sciences (Technics), Full Professor,*
***I.K. Burdun**, Student,*
V.N. Karazin Kharkiv National University

STUDY OF THE DETERMINANTS OF THERMAL REGIME OF MINERAL DUMPS ON THE EXAMPLE OF DONETSK CITY

The main features of thermal regime of the mineral dumps located in Urban Landscape of Donetsk city have been investigated. By making use of the digital model of the optical images of the studied territory in infrared diapason, obtained by Landsat-5, the map of instanteous temperature distribution in the underlying surface has been calculated for the determination of thermal anomalies. The inverse problem of the analysis of the components of thermal balance in the surface parts of the mineral dumps has been solved. The main processes underlying the occurrence of the infrared spectrum in optical images of mineral dumps have been identified.

Keywords: thermal regime, mineral dumps, radiation balance of inclined surfaces.

UDC 911.3

***D.A. Shynkarenko**, Postgraduate student,*
V.N. Karazin Kharkiv National University

TRANSPORT AS COMPOSES TRANSPORTATION SYSTEM WITHOUT COMMUNICATION BIG CITY

An important role in the study of transport complexes regional and global scale belongs social and economic geography. It explores the features of the functioning of transport systems, the main direction of movement of passengers and cargo, exploring individual transport companies in the economy of cities and regions, particularly analyzes the configuration of transport networks in different natural and economic conditions, establishes the general laws of development of transport communications and systems.

The study of this topic is relevant, because transport - an important link in the economic relations. An important role is played by the transport industry to improve the level and quality of life.

The transport system of Kharkiv combines the activities of the different modes of transport: road, rail, aviation, urban electric transport. The article provides a description of transport in Kharkov, address all types of passenger and analyzed the activity of transport in town. Found that the largest share of intra-urban transport accounts for Subway. A significant number of residents and visitors of the city tram and trolleybus services, which accounted for 30.9% of all passenger traffic. The transport system of Kharkiv is one of the leading places among the other major cities, provides an important part of the cargo and passenger transportation in Ukraine.

Stable operation of all types of public transport is an essential condition for the normal functioning of the economy of Ukraine. The article defines the problems of the transport complex of the city and the ways of its optimization.

Keywords: transport, transport system, transport network, spatial self-organization.

UDC 911.3

***O.O. Ianovska**, Postgraduate student,*
V. N. Karazin Kharkiv National University

HISTORICAL-ARCHITECTURAL PROJECTS AS A COMPONENT OF THE CULTURAL COMPLEX OF KHARKIV REGION

Recently in Ukraine is observed a decrease of interest to the national history, cultural traditions and cultural heritage including historical and architectural sites. To investigate the significance of historical and cultural objects the scientists use a variety of terms: property, inheritance, heritage, attractions and other. Cultural heritage sites are divided into archaeological, historical, monumental art objects, objects of architecture and urban planning, the objects of landscape architecture, landscape, objects of science and technology. The objects of cultural heritage are listed into the State Register of Immovable Monuments of Ukraine.

In terms of cultural heritage monuments of national importance Kharkiv region ranks the eighth place in Ukraine (there are 34 heritage sites of national importance). Also, there are 226 cultural heritage sites of local importance in the region. By the density of cultural heritage Kharkiv region ranks the sixth place in Ukraine (0,83 item per 100 km^2). The highest value this figure has in Kupyansk (134,73 item per 100 km^2) over a small area of territory and a large number of cultural heritage sites of local importance. Unfortunately, a lot of the cultural heritage, especially the historical and architectural are in unsatisfying condition due to the lack of funding. Today, Kharkiv region needs a large number of investments for the restoration of cultural heritage. This will promote the development of cultural tourism in the region and also is very important for protection of cultural heritage.

Keywords: historical-architectural sites, cultural legacy, the State register of immovable monuments of Ukraine, the density of objects of cultural heritage, cultural tourism.

ECOLOGY

UDC 911.1+504.054.36

***Yu.V. Buts**, PhD (Geography), Associate Professor,*
V.N. Karazin Kharkiv National University, School of Ecology,
phone: +380506830899, e-mail: butsyura@ukr.net

LANDSCAPE-ECOLOGICAL APPROACH IN RESEARCH OF FOREST FIRES

Theoretical researches that has deal with leading role of landscape-ecological approach at the analysis of dynamics of origin and distribution of forest fires on the example of the Kharkov area are presented. It is certain that naturally-territorial complexes with the azonal types of vegetation (pine and deciduous forests) are marked most of forest fires, and exactly in such nature-territorial complex (NTC) an area is passed a fire there is determining.

It is shown that the most of forest fires arises up near-by settlements, in recreational areas park-forest arrays. However, due to the rapid identification and emergency response, fire covered square are insignificant. Forest fires in far from human settlements azonal forest stands are lately determined and put out the fire also late. The nature-territorial complex is characterized by moderate flammability of forests by frequency and high enough flammability by the area.

Estimation of fire risk not on administrative districts and forest enterprises, but on landscapes, gives detailer and thorough description of current situation taking into account the real spatio-temporal differentiation of natural environment which is especially important in the conditions of the moderate and excessive technogenic loading.

Subsequent researches can be concentrated also on the estimation of fire hazard and determination of parameters of fires for the states of other NTC of Ukraine, on creation of a data bank and development of the system of the operative monitoring for all of the State forest fund of Ukraine.

Keywords: landscape-ecological approach, state of naturally-territorial complex, forest fire, fire hazard.

UDC 911.3

***T.V. Yeroshina**, Postgraduate student,*
Institute of Geography of NAS of Ukraine

ORGANIC FOOD PRODUCTION IS AN IMPORTANT LINE OF DEVELOPMENT OF AGRICULTURAL SECTOR OF ECONOMY OF UKRAINE

Territorial organization of production of environmentally friendly agricultural products should be considered as a coherent system of interrelated and interdependent component and territorial elements of ecological production on different ranks, united to meet the needs of the population in high-quality food. On the other hand, this includes complex socio-economic, organizational and legal measures aimed at ensuring the optimal spatial structure of ecological production, sustainable use of its resources, and adequate attention to the social aspects of its functioning.

Given the complexity and interrelationship of problems of forming a rational structure of regional ecologically pure production its transformation must be based on the basic conceptual principles: improving the regulatory role of the state (region), balance, consistency and comprehensiveness, the rational allocation of production, planning, prioritization, ensuring food security, resource conservation and environmental safety, legality and legal security.

For the improvement of the organization and increase the export potential of environmentally friendly agricultural products needed are the following events: rational use of regional natural resources and labor potential areas, creating a favorable investment climate in the agricultural sector, the full support of nongovernmental organizations and associations of producers from state environmentally friendly producers and local governments, creating regional logistics and trade networks of environmentally friendly goods, perfect information and advisory services to producers and consumers, focus on existing consumer demand, creating regional clusters of agro production of environmentally friendly products, green infrastructure to attract tourism.

Keywords: agricultural organic products, industrial and ecological cluster, the territorial organization of production of agricultural organic food, the efficiency of the territorial organization.

UDC 550.4+519.2+504

***M.N. Zhukov**, Doctor of Sciences (Geology), Full Professor,*
***A.V. Klypa**, Postgraduate student,*
Taras Shevchenko National University of Kyiv,
phone: +380445213338, e-mail: jukov42@ukr.net

LEVEL AND FACTORS OF SURFACE WATERS POLLUTION WITH HEAVY METALS (EVIDENCE FROM THE POLTAVA, SUMY AND CHERNIHIV REGIONS)

In addition to traditional statistical parameters of surface waters' pollution the estimation of the size of the area on which the level of pollution exceeds the specified critical value has been offered. The efficiency of the proposed parametric method of such areas' estimation has been shown. Based on hidrolitochemical surveys of 1985-1988 and 1991-1993, which were held in Poltava, Sumy and Chernihiv Regions, the areas in which the content of heavy metals in surface waters (Ba, Co, Cr, Cu, Mn, Mo, Ni, Pb, V, Zn) exceeds the critical limits have been calculated. The dynamics of these areas, accompanied by the growth from 0-16% to 3-60% during the period mentioned, have been investigated. Factors affecting the change in chemical composition of water and their role in the deterioration of ecological conditions in the aquatic environment of the region, which was formed at the end of the study period, have been analyzed.

Keywords: hidrolitochemical survey, heavy metals, metals in surface waters, parametric method, critical limits.

UDC 911.52.001+504.4.054(083.74)

***A.N. Krainiukov**, PhD (Geography),*
Associate Professor,
V.N. Karazin Kharkiv National University

CONDITIONALITY FORMATION OF ECOLOGICAL CONDITION OF SURFACE WATERS BY FEATURES OF NATURAL LANDSCAPES IN THE CATCHMENT AREA

The article deals with the theoretical principles of conditionality formation of ecological condition of surface waters and their functional units - water geoecosystem depending on the characteristics of the morphological structure of natural landscapes in the catchment area and the processes which take place in it. It is shown that the basic components form a condition of water geoecosystems, which include matter cycling, energy and information, climate, relief and biota. Much attention is given to the expediency of using biotic component of water geoecosystem in normalization of anthropogenic pollution of surface waters, which ensures its stability and conservation of their functional properties, structure and gene pool. It is due to the ability of living organisms to adapt to changing abiotic conditions, transform habitat and maintain normal functioning of biocenose.

Keywords: ecological state of surface-water, catchment area, water geoecosystem, morphological structure of landscape, setting of norms of anthropogenic contamination.

UDC 911+504.567

***N.L. Rychak**, PhD (Geography), Associate Professor,*
Karazin Kharkiv National University,
e-mail: rychak@ukr.net

QUALITY OF RIVER WATERS UNDER THE INFLUENCE RUNOFF IN URBAN AREAS

By the issue of the impact of surface runoff urban areas the quality of surface waters. Analysis of current domestic and foreign scientific approaches to solving existing problems. Considered specifics runoff urbanized area. Uncontrolled runoff in urban areas form the rains, pulleys and watering and washing water. Quantitative and qualitative characteristics of water vary according to the season. Specificity of runoff due to constant changes in the composition of pollutants, sharp changes in the level of pollution, changes in water flow and episodic falling. The formation expenses runoff from different areas of influence "closed" and "open" urban surface coating material surface coefficient of impregnation. In determining the concentration

of pollutants found in storm water summarize quantitative characteristics of each component of runoff. We analyzed the quality's. Kharkiv Lopan, Uda, emerging to hit (upstream) in the metropolis and at the outlet (downstream). Poor quality of river water: high levels of BOD 5, the high content of nickel, copper and zinc sulphates and ammonia nitrogen.

Keywords: surface runoff, urbanized area, river water.

UDC 504.06 (470.325)

***E.A. Statsenko**, Postgraduate student,*
***A.G. Kornilov**, Doctor of Sciences (Geography), Full Professor,*
The National Research University "Belgorod State University"

DEVELOPMENT OF THE ECOLOGICAL FRAMEWORK IN THE EARLIER DEVELOPED REGIONS

We developed a scheme for the design of ecological framework conditions earlier developed in the densely populated region, as well as an updated list of specified grounds, which may be elements of the ecological framework, taking into account the identified environmental and recreational value, with the mapping results. An evaluation of ecological value of landscapes of a territory should become a synthetic card. Cartographic representation of the results of evaluation of the environmental significance of territories is the basis for identifying the optimal combination of preferred species of wildlife in the study area. Identified support elements allow you to develop regional and district maps with traditional ecological framework, the release of the standard set of functional areas.

Keywords: anthropogenic load, agroecosystems, supporting elements of ecological structure, protected natural territory.

UDC 551.4+504.03

***I.G. Chervanyov**, Doctor of Sciences (Technics), Full Professor,*
***L.N. Bortnik**, PhD (Biology),*
***N.V. Gryschenko**, Postgraduate student,*
Karazin Kharkiv National University

THE NATURAL CAPITAL IS A SABJECT OF ENVIRONMENTAL ECONOMIC AND FACTOR OF CONSTRUCTIVE USE OF NATURE

In the modern post-industrial era economy and geography acquire qualitative features in relation to their traditional status and at the same time come closer to each other on the platform of in-depth attitude to nature. Nature in constructive geography is represented as a complex of geosystems as self-replicating objects. For environmental (ecological, "green") economy, they are components of natural recourse capital. The modern system of natural resources' usage is built on unconscious exploitation of natural recourse capital (as it is not a part of the economic system, and refers to the externalities). The result of natural recourse capital's exploitation is a natural resource rent, which is implicitly appropriated by the land owners through the added value.

The task of constructive geography in this regard is to adopt arsenal of environmental economy, considering its most important task as a care of natural resource capital and rent, which are to be used as its economic categories. Three economically important forms of natural resource capital are identified: an **anthropogenic** (artificially created), **critical** (includes the main components of biosphere, natural wealth, which ensure the conditions of its stability and the reproduction of environment), **other** forms of natural recourse capital, including renewable and exhaustible natural resources, which provide reproduction of the recourses. Allocation and evaluation of natural recourse capital would allow to make inventory and to include nature qualities which generate human values in national wealth.

The authors clarified the concept of "natural resources" with a glance of observation at transformation of intangible resources into assets for sustainable development in a number of economy's sectors.

Keywords: geosystem, reproduction of environment, reproduction of the recourses, sustainable development, constructive nature use, natural recourse capital, natural resources, nature, the environment, natural recourse rent.