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Журнал освещает фундаментальные исследования и результаты прикладных работ по проблемам аридных экосистем и борьбы с антропогенным опустыниванием в региональном и глобальном масштабах. Издается с 1995 года по решению Бюро Отделения общей биологии Российской академии наук.

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Addresses of Editorial Offices:

*Russia, 119333 Moscow, Gubkina str., 3, WPI RAS

Tel.: (499) 135-70-41. Fax: (499) 135-54-15

E-mail: arid.journal@yandex.ru

**Russia, 367025 Makhachkala, Gadjieva str., 45, PIBR DSC RAS

Tel./Fax: (872-2) 67-60-66

E-mail: pibrdnrcan@mail.ru

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THE GENERAL REGULARITIES OF SOLUBLE SALTS MIGRATION IN MAIN SOILS OF TERSKO-KUMSKAYA LOWLAND

© 2010 Z.G. Zalibekov^{*,**}, U.A. Galimova^{**}

**Pricaspiyskiy institute of biological resources of the Dagestan scientific center RAS
Russia, 367025, Makhachkala, M. Gadjiev str. 45, pibrdncran@mail.ru*

***Dagestan State University
Russia, 367016, Makhachkala, Batiraya str. 14^b, bfdgu@mail.ru*

Abstract. Deltaic ecosystems of the Tersko-Kumskaya lowland are characterized by the greatest variability of soil formation conditions and soil variability in salinity and alkalinity. The differences connected with dynamics of salinity and level of Caspian sea, ground and surface soil moisture are manifested in the processes of salt accumulation, desalinization, migration in spatiotemporal aspect. Migration dynamics of salts is affected by modern and paleofeatures of soil and soil forming rocks. A complicated character of the processes of salinization and desalinization and irreversible dynamics contribute to increase of the variety of salt-affected soils and soil forming processes with three demensions: time, space and direction.

Key words: salinization, desalinization, neutral salts, alkalinity, reversibility, migration, processes, profile, hysteresis, variability.

SCIENTIFIC HERITAGE OF THE XVIII-XX-th CENTURIES – AS A BASIS FOR DEVELOPMENT OF STEPPE SCIENTIFIC SCHOOLS

© 2010. A. A. Chibilev, O. A. Grosheva

*Institute of steppe, Ural Department of Russian Academy of sciences
460000, Russia, Orenburg, Pionerskaya st., 11, orensteppe@mail.ru*

Abstract. The role of the scientific heritage of the naturalists XVIII-XX of centuries in the development of steppe scientific schools is examined. It is noted, that the main role in the formation of scientific schools was played by the general geographic school by W.W. Dokuchaev and the first geographical departments.

Key words: scientific heritage, scientific school, the scientific centers.

FORMATION OF A NEW DELTA OF THE ILI RIVER IN KAPCHAGAY WATER RESERVOIR

© 2010. V.M. Starodubtsev, V.A. Bogdanets

*National University of Life and Environmental Sciences of Ukraine
Kiev, 03041, 15 Geroyiv Oborony st., vmstarodubtsev@ukr.net*

Abstract. Process of the new delta of the Ili River formation where it flows into the Kapchagay reservoir and hydromorphic landscapes formation has been considered. Space images of Landsat 5 and 7 utilization provided possibility to describe this process by space and by time for the period 1979-2009. Space images processing with special software enables to determine an area of new-forming landscapes and study soil and vegetation cover specified by land-based monitoring. New deltas formation in large reservoirs is considered as the typical process for arid zone.

Key words: delta, reservoir, landscape, space image.

ABOUT THE CHANGE OF WEIGHT FEATURES OF *TRIFOLIUM RADDEANUM* TRAUTV. DEPENDING ON TIMES OF COLLECTION

© 2010. A. D. Khabibov *, P. M.-S. Muratchaeva **

**Mountain Botanical Gardens of the RAS Dagestan Scientific Centre
Russia, 367025 Makhachkala, Gadjiev st., 45, E-mail: gakbari05@mail.ru*

*** Pricaspiyskiy Institute of Biological Resources
Russian Academy of Sciences, Dagestan Scientific Centre,
Russia, 367025 Makhachkala, Gadjiev st. 45, E-mail: pibrdnrcan@mail.ru*

Abstract. The optimal terms of material collection are determined for the clover Radde. Dispersional and regression analysis showed that the terms of material collection in all years of the study influenced much on the change of weight features of the generative shoot and its components. The influence of the terms of material collection on reproductive effort is insignificant or it has casual character.

Key words: clover Radde, dry biomass, generative shoot, stalk, leaf, inflorescence, reproductive effort, terms of collection.

PRESENT STATE OF WATER RESOURCES IN ROSTOV REGION

© 2010. S. V. Dolgov, S. I. Shaporenko *, N. I. Sentsova **

** Institute of Geography of the Russian Academy of Sciences
Russia, 119017 Moscow, Staromonetnyi per., 29, E-mail: hydro-igras@yandex.ru*

*** Institute of Water Problems of the Russian Academy of Sciences
Russia, 119333, Moscow, 3, Gubkin Str., E-mail: sentsova@yandex.ru*

Abstract. Dynamics of modern anthropogenic impact on water resources is studied and features of their reaction to the occurred changes are revealed. It is stated that the quality of water according to a number of hydrochemical indicators has been improved, but remains in general unsatisfactory, especially by hydrobiological features. A level of the pollution with biogenic chemical is very high in many small rivers and in ground waters. The vegetation is the main and annually renewed source of biogenic chemical substances to ground and surface waters.

Key words: water resources, anthropogenic impact, rivers, ground waters, vegetation.

ANOMALIES OF SOIL MOISTURE IN THE NORTH-WESTERN PRICASPIAN LOWLAND USING SATELLITE DATA IN THE END OF XX - BEGINNING OF XXI CENTURY

© 2010. E. A. Cherenkova *, A. N. Zolotokrylin *, N. M. Novikova **, A. A. Vyshivkin **

* *Institute of Geography, Russian Academy of Sciences
Russia, 119017 Moscow, Staromonetnyi per., 29, E-mail: lcherenkova@marketresearch.ru*

** *Water Problems Institute of the Russian Academy of Sciences
Russia, 119333 Moscow, Gubkina str., 3, E-mail: nmnovikova@gmail.com*

Abstract. Anomalies of the Soil Water Index (SWI) of the remote sensing data in the North-Western Pricaspian Lowland from May to August of the period 1992 to 2008 were studied in the paper. Periods of low and high moistening were identified on base of Thornthwaite Moisture Index (TMI).

It is shown that the spatial and temporal distribution of anomalies of the SWI is consistent in sign with the anomalies of TMI, obtained using 17 meteorological stations on the territory.

The deviation from the average annual values of SWI and TMI for the period 1992-2008, exceeding the positive standard deviation, characterizes the anomaly of increased air or soil moistening. A similar negative deviation characterizes the anomaly of low moistening (deficit).

There are the periods of low moistening of the North-Western Pricaspian Lowland: in June 1992, July 1994, from May to August 1995, at 1996 (excluding June) and 1998, in June 1999 and 2004, from May to August 2005, in the summer of 2006 and 2007, and in July and August 2008. The high air moistening was observed from May to August 1993, in May and July 1997, in May and August 1999, in the observation period in 2000, in July 2004, in May 2006 and May 2008.

Predominantly positive anomalies were observed in May 1993, trends in local anomalies indices differ in the north and south (Figure a)). The anomalies sign and trend of changes in SWI and TMI in June 1993 and May 1997 are the same (Figures b and c). Anomalies of one sign for both indicators was observed in the south of the North-Western Pricaspian Lowland in May 2000, the sign of anomaly of SWI and the anomaly of TMI do not coincide in the north (Figure d)). The positive anomaly of TMI prevailed in the region in May 2008. Trends in local anomalies of SWI varies in the north and south of Astrakhan region (Figure e)).

The quantity of negative and positive anomalies of SWI does not differ in the north and south of the region (Table). Positive anomalies of SWI are found more frequently in May and June in the period 1992-2008 in territory of the Astrakhan region and negative anomalies prevailed in July and August. Positive anomalies of an index were found more often in May, June and August in the south region, and negative - in the north.

Comparison of satellite and ground data of soil moisture in the Dzhanybek area region was conducted. It was found that the satellite data adequately reflect seasonal trend in soil moisture based on ground measurements.

Key words: Soil Water Index, anomaly, Thornthwaite Moisture Index, satellite data.

FORMATION OF THE PHYTOCOENOSISES ON THE ASH DUMPS OF UZHNOURALSK POWER STATION

© 2010. N. V. Lukina

*The Ural State University named after M. Gorky,
Russia 620083, Ekaterinburg, Lenin Avenue, 51, E-mail: Tamara.Chibrik@usu.ru*

Abstract. In this paper authors describe some particularities of phytocenosis formation dynamics on Uzhnouralsk power station ash-dumps, 15, 25 and 35 years after recultivation activities, description of direction and rates of cultural phytocenosis and self grown territories species composition transformation according to their ecotopes.

The investigation of phytocenosis transformation on recultivated Uzhnouralsk power station ash-dumps have shown that after biological recultivation activities there can be seen productive and valuable systems with dominating of transplanted species: *Onobrychis arenaria* (Kit.) DC., *Medicago media* Pers., *Bromopsis inermis* (Leyss.) Holub. Lack of care and pasture load have increased disintegration and degradation of phytocenosis. Further in 10-15 years cultural species (especially legumins) were forced out by wild growing ones. Transplanted later in 10 years, after the first sowing, *Agropyron cristatum* (L.) Beauv. successfully settled, partial taking root into systems on empty ash.

Investigations, which took place 35 years after biological recultivation, have shown that different-crop-cereals phytocenosis with dominating of *Agropyron cristatum* (L.) Beauv., *Elytrigia repens* (L.) Nevski, *Euphorbia virgata* Waldst. et Kit., *Artemisia dracunculus* L. was formed on recultivated ash-dump. The transformation of cultural phytocenosis goes with their xerophytisation along the way of crop systems forming, which approach to meadow steppe with dominating of *Agropyron cristatum* (L.) Beauv. and *Poa pratensis* L.

On the land parts of empty ash self grown plant cover forming goes slowly with detention of 10-15 years – from simple non closed different-crop-wormwood plant groups, with the most stable for ash growing species of local flora (*Artemisia dracunculus* L., *A. campestris* L., *Achillea nobilis* L., *Potentilla bifurca* L. etc.) including a lot of ruderal species (*Artemisia absinthium* L., *Berteroa incana* (L.) DC, *Erysimum cheirantoides* L.) to more complex of species amount different-crop-wormwood phytocenosis.

After 35 years on empty ash one can see forming of less species amount different-crop-cereals phytocenosis with prevailing of *Festuca pseudovina* Hack. Ex Wiesb., *Poa pratensis* L., *Calamagrostis epigeios* (L.) Roth, *Artemisia dracunculus* L.

Key words: biological recultivation, phytocoenoses, monitoring, ash dumps.

NATURE RESERVES AND OTHER PROTECTED AREAS OF CENTRAL ASIA AND KAZAKHSTAN IN RECENT SCIENTIFIC PUBLICATIONS

NATURE RESERVES OF CENTRAL ASIA AND KAZAKHSTAN . 2006 / ED.

R.V. YASHCHENKO (PROTECTED AREAS OF CENTRAL ASIA AND KAZAKHSTAN. ISSUE 1). ALMATY: TETHIS. 312 pp. (in Russian)

A.A. IVASHCHENKO (COMP.) 2006. NATURE RESERVES and NATIONAL PARKS OF KAZAKHSTAN. ALMATY: ALMATYKITAP. 284 pp. (in Russian)

© 2010. V. V. Bobrov

*The A.N. Severtsov Institute of Ecology and Evolution, RAS
Russia, 119071 Moscow, Leninskiy prospect., 33, E-mail: bobrov@sevin.ru*

Abstract. Two books on nature reserves and national parks of Kazakhstan and Central Asia are considered. In the books detailed descriptions of these protected areas, background materials on nature, plant and animal diversity are presented.

Key words: Kazakhstan, Central Asia, nature reserve, national park, protected area.

NEW BOOKS

Balamirzoev M.A, Mirzoev E.M.-R., Adzhiev A.M., Mufaradzhev K.G. SOILS OF DAGHESTAN. ECOLOGICAL ASPECTS OF RATIONAL USE. Makhachkala: The Daghestan book publishing house, 2008. 336 p.

Materials on the characteristic of ecological condition of soil cover, dynamics of change of indicators of soil fertility, amelioration of salted soils, protection of soils against water and wind erosion are presented. For the first time developed in scale 1:200000 the detailed soil map (in new edition), map of soil-agroecological zoning and map of yield class of soils of Daghestan are presented.

For soil scientists, geographers, ecologists.

For the purpose of acquisition of book «SOILS OF DAGHESTAN. ECOLOGICAL ASPECTS OF RATIONAL USE» it is possible to apply to the address: Russia, 367025, Makhachkala, Gadzhiev's street, 45. Near-Caspian institute of biological resources Dagestan center of science the Russian Academy of Sciences. Phone: (872-2)67-09-83, E-mail: pibrdncran@mail.ru.

Kosolapov V.M., Trofimov I.A., Trofimova L.S. FORAGE PRODUCTION – A STRATEGIC DIRECTION IN ENSURING FOOD SAFETY IN RUSSIA. THEORY AND PRACTICE. M.: Rosinformagrotech, 2009. 200 p.

The book shows the scientific and practical basis for improving productivity and sustainability of Russian agriculture, agricultural land and agro landscapes on the basis of environmental management. The prospects of managing and designing agro-ecosystems and agricultural land by strengthening the role of fodder production, perennial grasses in the infrastructure of agricultural landscapes, crop pattern and crop rotation.

Attention is drawn to the fact that herbal ecosystems not only provide forage for livestock, they preserve agricultural land, agricultural landscapes, create soil fertility. Too small a proportion of grassland and perennial grasses in the structure of agricultural land and acreage destroying agro landscapes of Russia – the very basis, a production base of agriculture. At the same time forage ecosystems contribute to the preservation and accumulation of organic matter in the biosphere, perform essential productional, environment stabilizing and environmental functions in agricultural landscapes and have a significant impact on the ecological condition of the country.

For biologists, ecologists, geographers, agricultural practices, teachers and students.

AGROLANDSCAPE-ECOLOGICAL ZONING AND ADAPTIVE INTENSIFICATION OF FORAGE PRODUCTION OF THE VOLGA REGION. THEORY AND PRACTICE, Editors: Doctor of Agricultural Sciences V.M. Kosolapov, Doctor of Geographical Sciences I.A. Trofimov. Moscow-Kirov: "Printing House VYATKA", 2009. 751 p.

In the monograph prepared by a team of authors, given the scientific basis, materials and methods of research results agrolandscape-ecological zoning of the Volga natural-economic region of the Russian Federation. To account for regional differences in natural and economic conditions, biological and environmental laws are assessing the current state of agrolandscapes, agricultural lands, development of negative processes. We consider the problem of adaptive intensification of forage production, improving productivity and sustainability of agrolandscapes based on optimization of feed and environmental management. The prospects of managing and designing agroecosystems and agricultural land. Defined organizational and agro-technical measures to improve the productivity and sustainability of agricultural land. The book contains three main

sections: 1. Agrolandscape-ecological zoning of agricultural ecosystems, 2. Management of agricultural landscapes and their design. Adaptive intensification of forage production 3. Management of agricultural landscapes and adaptive intensification of forage production in the Volga region.

The authors justify the leading role in optimizing forage production agrolandscape systems, sustainable management of production, environment forming and environmental functions of agricultural land. A concrete example of the Volga natural and economic region of Russia clearly demonstrated the possibility of practical application of highly scientific research. Criteria and practical optimization options of species composition and structure of the acreage of fodder crops, their rational distribution in space (on the land) and time (in the structure of crop rotations).

For biologists, ecologists, geographers, agricultural practices, teachers and students.