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Functional-Dynamic Landscaping Complexes Of River Basins Of Southern Uzbekistan And Their Cartography

Quvondiq Yarashev *, Elmurod Ulugmurodov **

* Head of the Department of Geography and Natural Resources, Samarkand State University, Associate Professor, PhD. E-mail: quvondiqyarashev2019@gmail.com
** Doctoral student of Samarkand State University. Email: uelmurod89@gmail.com

Abstract: Special attention is paid to the study of acceleration of negative natural geographical processes such as the use of land on our planet for various economic purposes, research of areas for different economic purposes, using horizontal and vertical stratification of landscapes and their structure as a functional-dynamic whole, optimization of geoecological situation on the basis of paragenetic and paradynamic principles of landscapes, micro-zoning of spreading landscapes, deterioration of soil and arable land reclamation, intensification of erosion processes, soil and plant degradation, deflation.

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Introduction.

Special attention is paid to the study of acceleration of negative natural geographical processes such as the use of land on our planet for various economic purposes, research of areas for different economic purposes, using horizontal and vertical stratification of landscapes and their structure as a functional-dynamic whole, optimization of geoecological situation on the basis of paragenetic and paradynamic principles of landscapes, micro-zoning of spreading landscapes, deterioration of soil and arable land reclamation, intensification of erosion processes, soil and plant degradation, deflation.

Main part.

According to scientists (Reteyum A.Y., Gvozdetsky N.A., Stepanov I.N., Isachenko A.G.), the principle of functional-integrity has its great advantages in the study of objects as a geosystem. At the same time, this principle does not reject the genetic, typological methods that are widely used in landscape, and on the contrary, they complement each other. Therefore, we used the genetic principle in our research to study the functional whole geosystems of South Uzbekistan, and used the principle of functional integrity in the study of river and stream basins. We can see that functional-dynamic geosystems are inextricably linked with the formation of specific natural conditions, geological and geomorphological and natural geographical processes. All geosystems in nature, from the largest to the smallest, elemental unit, have a strong internal connection with each other. The terms geosystem, natural territorial complex, natural geographical complex, landscape complex are understood synonymous by many authors [9; 10-80 b.].

A.Yu. Reteyum studies surface water currents on the basis of geosystem theory and considers it as a system-forming current. The author focuses on the flow of matter and energy in the separation of terrestrial geosystems. According to him, "geosystems are separated in terms of functional integrity, the boundaries of geosystems in practice correspond to the boundaries of flows, the boundaries of the area where the migration of substances occurs" [6; 17-20 p.].

The study of the formation and development of river basin geosystems is one of the most pressing problems of natural geography and geomorphology and the largest Amudarya basin in the river basins of southern Uzbekistan, together with its large catchment area, flow channel, delta, a large functional whole system, river tributaries are part of the Amudarya river system, independent, but organically connected by genesis of origin. The influence of geographical factors, ie tectogenic, climatic, hydrogen factors, is of great importance in the emergence and development of geosystems in the river basin.

River basins have four levels of differentiation as landscape geosystems: local (streams, confluents, tributaries, river basins);

regional (large streams, small river basins); mesoregional (basins of medium-sized rivers. For example, Surkhandarya, Sherabaddarya, Kashkadarya, Zarafshan); macroregional (large river basins, for example, Syrdarya and Amudarya).

The study of river basins as a functional whole system depends on a number of factors. River basins play an important role in this. The main structures of the river basin include the slope structure and the interconnected hydrographic network, as precipitation becomes elements of the water balance on the slopes and the hydrographic network redistributes the flow in time and space. In addition to subsurface and surface runoff, precipitation transformation also affects the formation of their chemical composition. However, the main function of the river basin is to generate one-way flow of iodine and energy as a geosystem.

River basins as a functional-dynamic system have four levels of differentiation: local (streams, confluents, tributaries, river basins); regional (large streams, small river basins); mesoregional (basins of medium-sized rivers. For example, Surkhandarya, Sherabaddarya, Kashkadarya, Zarafshan); macroregional (large river basins, for example, Syrdarya and Amudarya).

The river basin has the function of self-regulation as a functional whole geosystem, the essence of which is that the system changes the direct effects on it primarily due to the redistribution of matter and energy, and to some extent reverses this effect. At the same time it maintains a state of internal dynamic balance and equilibrium with its environment. Disruption of this balance leads not to changes in the ecological and morphological characteristics of river valleys, but to the active transformation of landscapes in the area in accordance with the new conditions of geosystem activity.

While each river and stream is an independent paragenetic complex, its upper part consists of a water collection and washing zone, the middle part of a transit zone that discharges accumulated water and deposits, and the lower part of a water distribution and turbidity accumulation zone. These zones are permanently closely connected to each other. River and river basins are separated from each other by watersheds. In most cases, aquifers also serve as the natural boundary of paragenetic landscape complexes [10; 7-9 b.].

The Amudarya Basin, together with all its tributaries, saturated glaciers, valleys and large deltas, forms a functional whole geosystem, i.e. a macroparagenetic landscape complex. The Amudarya is the wettest river in the Aral Sea basin. Two-thirds of the Aral Sea's water resources come from the Amudarya, 85% of which comes from Panj and Vakhsh, and the remaining 15% from other tributaries, such as Surkhandarya. The river basin is 309 thousand km^2 [8; 5-328 p.], Of which the catchment area, ie in the mountainous part, is 199350 km^2, and the total length of the river is 2540 km. The flow rate in the catchment area of the Amudarya Basin is 73.6 km^3 or an average of 2,500 m^3 / sec [5; 20-280 p.].

In the conditions of Central Asia, the floodplain of large rivers from the point of view of the landscape, the slope of the major rivers is the tugai terrain, the terraces are the terrace terrain, and the large deltas are the alluvial plain delta. The Amudarya crosses mountain, foothill-plain and plain desert landscapes. At the same time, they correspond to different regions in the natural geographical zoning - countries, zones, provinces and districts. Nevertheless, all the elements of the Amudarya valley - floodplaines, sloping terraces, asymmetrical slopes, deltas are interconnected by a common origin and form a whole paragenetic landscape complex of the valley. Taking into account above, we consider the Amudarya Basin as a holistic natural geographical area based on the principle of paragenetic interdependence, a macroparagenetic landscape complex based on the taxonomic units developed by A.A. Abdulkasimov in 2004 for paragenetic landscapes. The river can be divided into three parts from its source to its position: water catchment basin, flow channel and delta [9; 15-80 b.].

F.N.Milkov [4; 5-207 b] admits that the river basin is one of the most common complex paragenetic landscape complexes in nature. Each basin of the river serves not only as a hydrogeomorphological complex, but also as a specific natural geographical complex. Therefore, stream and river basins, erosion-cliff systems, irrigation structures, lake basins, etc. serve as a basis for the formation and development of paragenetic landscape complexes in different taxonomic units.

In the study and assessment of the natural reclamation conditions of irrigated lands in the Lower Amudarya region, using the basin method of relief plasticity, A.K.O'razboev [7; Pp. 33-34] focused on the common collector basin in the region. In his opinion, reservoir basins should be considered as the most common type of functional-dynamic geosystems in irrigated areas.

The maps depict the Surkhandarya basin in the form of a specific geosystem, while the Surkhandarya tributaries Topalang, Sangardak, Khojaipok and others are elementary in relation to Surkhandarya, they also form their own basin or system and play a leading role in stratification [9; 15-89 b.].

All geosystems in nature are divided into several genetic sequences according to their origin. These are tectogenic, cryogenic, biogenic, fluuvioglacial, nival-glacial, hydrogen, anthropogenic and others. Landscape complexes formed as a result of direct exposure to rivers and groundwater form a genetic sequence of hydrogen landscapes.

The history of cartography of landscape complexes is inextricably linked with the emergence of the doctrine of landscape and the history of the development of scientific landscape. The first landscape map was drawn in 1913 by L.S. Berg. B.B.Polinov, I.M.Krasheninnikov, O.N. Kazakova, A.G.Isachenko, K.I.Gerenchuk, K.G.Raman, F.N.Milkov, G.P.Miller, M. A.Museibov, N.L.Beruchashvili and others dealt with issues of landscape mapping in field conditions. A.D.Gojev, S.B.Bayguttiev, N.A.Gvozdetskiy, I.P. Chalaya, V.M.Chupaxin, V.M.Chetirkin, L.N.Babushkin and N.A.Kogay, T. V.Zvonkova A.Saidov, A.A. Abdulqosimov, Yu.Sultonov, Sh.E.Ergashov, A.A. Rafiqov, L.A. Alibekov, N.I.Sabitova and others created landscape maps of different scales in Central Asia and Uzbekistan.

Results obtained: Using the experience of landscape cartography, we have mapped the paragenetic landscape complexes of the regions, looking at the river basins of South Uzbekistan as a functional whole system. In compiling the map of paragenetic landscape complexes, we followed the following [9; 15-89]:

- Select the object of paragenetic landscape cartography and determine the scale of its implementation. In this case, firstly, it is necessary to know the range of the geographical complex depicted on the map, secondly, the scale and purpose of the map, thirdly, the characteristics and dynamic variability of the landscapes in the selected object;
- In addition to the formative and developmental factors of paragenetic landscape complexes, it is advisable to use soil types, relief forms, lithological composition of parent rocks and other indicators in the identification, separation and delineation of geographical complexes depicted on the map through practical field research;
- Carefully develop the classification and classification of complexes depicted on the map of paragenetic landscape complexes according to the degree of dynamic relevance and dependence of origin;
- It is necessary to first systematize and classify paragenetic landscape complexes, which will be the basis for the development of the legend of the maps;
- When mapping paragenetic landscape complexes, it is expedient to use the basin method of relief plasticity, because the dynamic connection between landscapes is more clearly visible in the method of relief plasticity. In many cases, the watersheds of streams and rivers also serve as the natural boundaries of paragenetic landscape complexes. Therefore, the hydrographic network is a factor in the development of paragenetic landscape complexes and is considered as a basis in mapping from a paragenetic point of view;
- It is necessary to create a map of paragenetic landscape complexes and a legend that vividly expresses the content and essence of the geographical complexes depicted in them.

We conducted field research in the river basins of South Uzbekistan, collected a lot of material on paragenetic landscape complexes, isolated paragenetic complexes with taxonomic units of different colors and made maps of them at different scales.

At present, we have used various cartographic methods to depict geocomplexes on maps of paragenetic landscape complexes, including methods of depiction of paragenetic complexes with a colored background and using barcodes. In the separation and mapping of paragenetic complexes in its territory consists of macro-, meso-, micro- and elementary paragenetic complexes and paragenetic facies and paragenetic urochis.

Based on this system of taxonomic units, we consider the river basins of South Uzbekistan as mountainous-mesoparagenetic landscape complexes with a complex structure. This mesoparagenetic complex is an integral part of the Amudarya mountain-plain valley paragenetic complex. This is because the Amudarya basin, together with all its tributary basins, saturated glaciers, valleys and large deltas, forms a macroparagenetic landscape complex.

The structure of the Surkhandarya, Sherabaddarya, Kashkadarya mountain mesoparagenetic landscape complex is complex, which in turn consists of a number of colorful microparagenetic complexes. These are valleys, valley-spreading, sand massifs, hills and adyrold proluvial plains - deserts, reservoirs-coastal and other microparagenetic landscape complexes [9; 15-122 b .; 10; 7-9 b.].

Microparagenetic landscape complexes are as complex a product as meso- and macroparagenetic complexes. The structural structure of any microparagenetic complexes consists of elementary paragenetic complexes of a paragenetic nature. Examples include tectonic uplift and development of Jayronkhana, Kokayti, Lalmikor, Hovdog, Maymonak, Kosontog and other uplifts, ravines formed by erosion and runoff, dry river systems, and fortified and unstrengthened eolian sandy deserts.

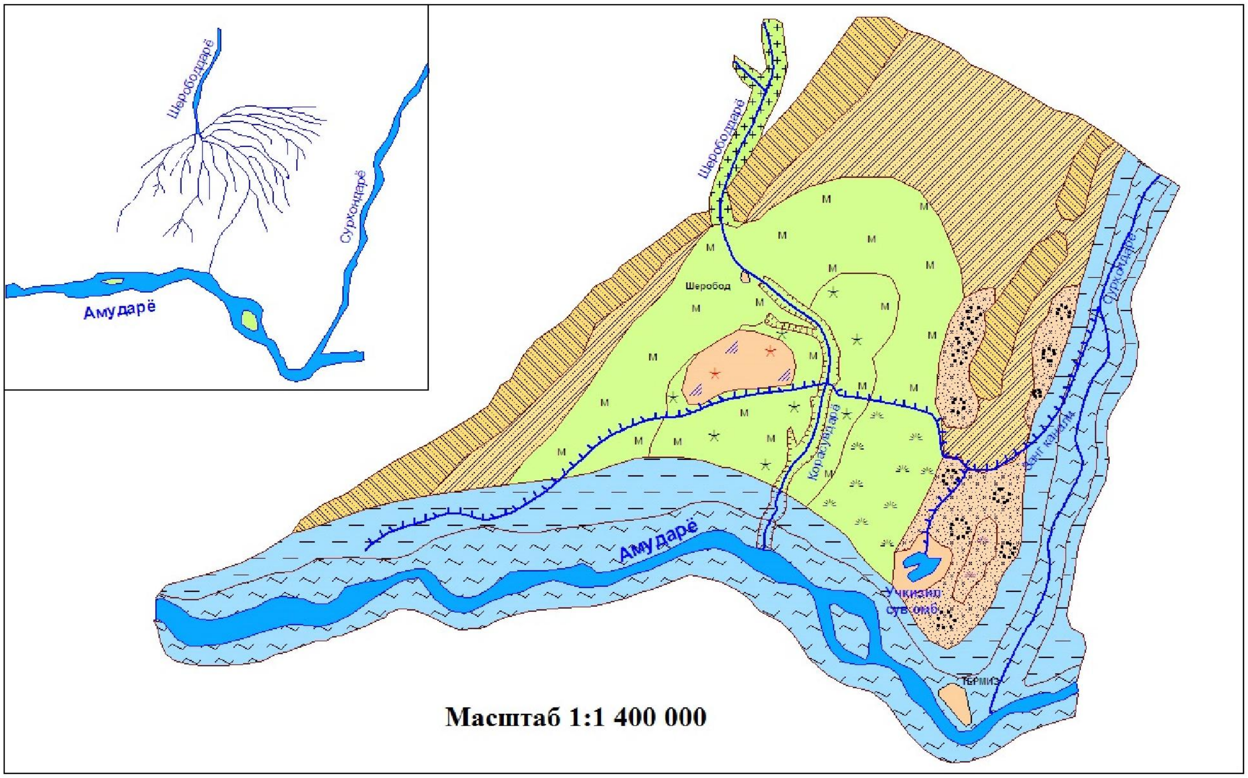

Figure 1. Map-scheme of paragenetic landscape complexes of Sherabad distribution and adjacent areas.

ap-scheme legend. Valley-spread microparagenetic landscape complex: Flow channel elemental paragenetic landscape complex; Cone-spreading elemental paragenetic landscape complex; Valley-cliff paragenetic urochisha; Paragenetic cultures in compacted irrigated bare soils; Paragenetic cultural shoots occurring in meadow soils in the middle part of the spread; Paragenetic agroforestry formed in assimilated meadow soils in the lower part of the spread; Irrigation-man-made paragenetic processes; The bald-sandy desert-submerged paragenetic ridges in the middle of the range. Hill-mountain proluvial plain desert microparagenetic landscape complex: Desert elemental paragenetic landscape complex of ephemeral-wormwood formation developed on light gray and brown soils of the hills; Uphill is an elementary paragenetic landscape complex of ephemeral-saline-worm-formed desert and oasis, developed in proluvial light-colored saline gray bald soils. Valley microparagenetic landscape complex: Non-volcanic elemental paragenetic landscape complex; Elemental paragenetic landscape complex on the terrace above. Seliteb elementary paragenetic landscape complex. Eol sand- -soil desert microparagenetic landscape complex: Elemental paragenetic landscape complex of graded sand with vegetation; An elemental paragentic landscape complex of semi-reinforced portable sand with vegetation. Reservoir-coastal microparagentic landscape complex: Coastal elementary paragentic landscape complex; Reservoir is an elementary paragentic landscape complex.

In conclusion, it should be noted that the meso-, micro- and elementary paragenetic landscape complexes we have identified within the river basins of Southern Uzbekistan are among the types of lands and types of urochisha described and mapped by A.A. Abdulkasimov, L.N. Babushkin, N.A. Kogay, Sh.Ergashov, V.M. Chetirkin differ radically from the landscapes in their essence, content, structure and features [11; 42-44 b; 12; 209-213] (Figure 1).

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