

PRINCIPLES OF ALLOCATION OF ECOLOGICAL-GEOMORPHOLOGICAL SYSTEMS (CENTRAL KAZAKHSTAN)

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An ecological approach to the analysis and assessment of the status and changes in the characteristics of the relief and relief-forming processes being environmental geomorphology. An ecological approach is the analysis and evaluation of relief, structure, substance of the human environment and forecast the results of his (human) the impact on the environment [1,2].

From the perspective of system analysis of the object of study of environmental geomorphology are the ecological - geomorphologic systems, which are different ranks complex dynamic unities. Recognizing the objective existence of these systems, while at the same time it is necessary to define the boundaries of them. Any natural and human - anthropogenic changes of the upper (litomorfny) of the Earth's crust are made in a particular space. However, each exodynamic process may eventually occur in any part of the upper crust, only the degree of conversion at the same time will be different. And this degree will be determined by a combination of factors, including geomorphologic, and in particular, the morphology of relief, the content and features of the lithogenic base. Human impact on the relief, and hence on the real-energy flows within geomorphologic systems, make certain spatial- temporal changes in the dynamics, direction and power of material-energy streams, there by changing the internal structure of these systems [3].

There are several approaches to the allocation of ecological - geomorphologic systems as objects of study of environmental geomorphology. Simonov Y.G., using a watershed approach, as the object of ecological-geomorphological research, suggests erosion- denudation system within the river system, as migration of pollutants subject to a whole watershed organization [4]. Lastochkin A.N. geotopologic approach assumes as elementary natural – territorial sistem a position of part of its lithogenic base of the unit surface [5]. According to the morphologic approach - this is the structural -morphological systems as sublimated expression of contradictory interaction of endogenous and exogenous factors in leading an active role or endogenous factors (it morphostructure) or exogenous (including anthropogenic) factors (it morphosculpture) [6,7,8, others]. According to O. Kashmensky "central place in modern science belongs to the study of complex dynamic systems, the properties of which are determined by the specifics of the systems approach. One of them is the geomorphological system", which is characterized by self-development and self-regulation [9, c.7]. Kruzhalin V.I. sees the solution of complex environmental problems through analysis and evaluation of the ecological role of relief within a complex system of "nature-economy-population". When are selected an ecological-geomorphological systems he discusses the relationships between relief and the NTS, between relief and management, relief and population (ethnic group).

Since the arena placement of NTS, the economy and the population is total, then, in our opinion, such a division is conditional, aimed at addressing certain research and applications. Skublova N.V. believes that the ecological-geomorphological system can be viewed from the perspective of different approaches or concepts, depending on the problems to be solved [10]. Whatever approach is allocated capacity of geomorphic systems (as well as ecologic–geomorphologic systems – R.B.) in its development exchange with the environment by matter and energy (hydro-, bio- and lithodynamic components) (4).

The principles of separation of ecological-geomorphological systems of CK depend primarily on the geological-geomorphological and climatic factors relief formation and the nature of economic development in a specific territory.

Geological-geomorphological factor includes the effect of a proper geomorphologic factor, creating spatial differences and specific set of relief-forming processes, and the structures, nudity and sustainability of lithogenic base. Climatic factor causes features and a variety of physical- geographical conditions that affect the characteristics of the formation of ecological- geomorphological systems. Climate Central Kazakhstan generally due to its geographical and midland position, and internal climatic differences – with morfoorografic factor. Development of the territory of Central Kazakhstan covers many kinds of management, but the backbone is the mining industry (both ground and underground). The reason for this is the similarity, and sometimes the openness of the basal platform structures, many of which are ore-bearing. With their development and connected to all the adverse and even dangerous to human life geomorphological processes caused by changes in the natural circulation of matter-energy flows [11]. All this leads to a change in the meso-and mikromorfometry of relief.

In the spatial distribution of the main types of relief of CK – low hills (melcosopochnic), low mountains, denudation and accumulative plains, - traced a clear pattern, caused structural plan of the latest tektomorfosistem. The common areas are the basis for the relief denudation plains. The core of CK belt forms the system of low mountains (1000-1500m) on a raised foundation of the denudation plains and low hills (melcosopochnic). To the north and south of this belt there is a stepwise decrease in the absolute height surface - arrays low mountains are replaced by denudation (different hypsometry) and accumulative plains.

The first step in the allocation of ecologic-geomorphic systems of the study area on the basis of functional-territorial principle was to conduct the main watershed between the basin of the Arctic Ocean and the Aral-Balkhash midland closed basin (Fig. 1). This major watershed divides the watersheds of the major rivers of the territory. Further, given the impact of solar climate, otherwise, using natural-zone principle, in these sectors can be identified 4 areas with their complexes relief-forming processes - steppe, dry steppe, semi-desert and desert. Within the areas with respect morphostructural and morfoorografical factors and, accordingly, the characteristics of the atmospheric circulation can be isolated border of ecological-geomorphological provinces. These provinces in each region

will be at least 3 - low mountains, of the denudation and accumulation plains (Fig. 1). Further, it would be logical allocation within the provinces of river basins, but it is, because most of the blurring of the watershed spaces, causing some difficulties. Therefore, a further division, in our opinion, can be done with regard to the gradation of the relief selected provinces - the slopes of low mountains, the surface of the adjacent upland plans of denudation (with hilly and undulating dissection) with a thin mantle of unconsolidated eluvial-talus and eluvial - proluvial deposits (within first meters), surface of reduced denudation plains with cover loose talus, talus-proluvial, proluvial-alluvial deposits (within a few tens of meters), accumulative plains filled with mostly alluvial (relative to the bottom of the major river valleys) and reduced accumulative plains made lake-fluvial and alluvial-eolian sediments. As can be seen, it's possible to differentiate these stages 5-6 – ecologic –geomorphologic fields (Fig. 1). Further division, if necessary, you can complete the allocation of elementary systems - morfolitotypes (ecologic - geomorphologic areas on homogeneous litologic substratum) [3]. Morfolitotypes can occupy different space-tall position - self-contained and subordinates (transit and final) [12]. Differences in their spatial-altitude position will determine the nature and intensity of exodynamic processes. Isolation morfolitotypes allows not only to give a qualitative description of the state, but also to analyze the quantitative relationship between phenomena and objects of the system. Thus, it is possible to trace the nature and degree of response of the various morfolitotypes at one and the same human impact and carry out relevant research forward.

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