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DYNAMIC ASSESSMENT OF INTERNAL WATERS OF THE JIZZAKH REGION (Uzbekistan, Jizzakh)

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Abstract
In this article, the role of the law of periodicity on the basis of the natural geographic conditions of Jizzakh region, interconnectedness and interconnectedness of geological and geographical features is indicated.

Keywords: Natural geography and periodicity legalities, natural geographic processes, self-sufficiency, Water Resources, geographic factors, territorial, periodicity, rhythmic, cyclic, climatic, geomorphological structures.

Introduction

Water is one of the main conditions for the existence of life on Earth. Not all water that exists in nature today can be used directly. Water resources consist not only of all fresh and moderately mineralized waters, but in our opinion, water resources consist of all fresh and moderately mineralized groundwater and surface waters that change during economic stages [3]. Therefore, it consists of the sum of water sources that are used and can be used in all sectors of the economy, including agriculture. Water is a renewable natural resource, but for this, firstly, the reserves of rivers, glaciers, groundwater must remain unchanged for centuries, and secondly, the level of pollution of natural waters under the influence of human economic activity must not exceed their ability to restore themselves qualitatively. Natural water bodies in the Jizzakh region also mainly administratively belong to the territory of the Jizzakh region. Therefore, below we will emphasize that they are internal waters of the Jizzakh region.

In the transformation of natural landscapes into anthropogenic landscapes, in the existence and development of geosystems, the importance of all components is considered great. Therefore, the importance of components in maintaining the state of geosystems is important, and one of the mobile components, water, due to its function in geosystems, has a special place. In nature, water connects the internal parts of geosystems with each other and with the external environment and with neighboring geosystems.

The nature of the Earth is always in continuous motion, change, progressive development and improvement. As a result of the study of these processes, such laws and theories have been created in the science of geography that, firstly, indicate the level of development of the science of geography, and secondly, have both theoretical and practical significance. One of such laws is the repetition of processes and phenomena inherent in the nature of the Earth after a certain period, that is, periodicity. It should be noted that in nature, absolutely similar processes and

events do not occur, but relatively similar, close realities are observed. These processes and events occur due to external and internal forces affecting the Earth. The periods and types of periodic repetition of processes and events occurring in the Earth's nature (geographical crust) are diverse. For example, periodic processes that repeat over night and day, monthly, seasonal, annual, multi-year, century, and finally long periods are among them. According to their content, periodicities have types such as tectonic, volcanic, seismic, stratigraphic (accumulation of sedimentary rocks), climatic, hydrological [4].

If we evaluate the hydrological characteristics of the region based on these periodic natural geographical laws, various hydrological phenomena and processes are observed in rivers and their tributaries in unexpected cases to this day. In particular, several days of heavy rain and hailstorms are observed, resulting in the formation of mudslides, the occurrence of avalanches in the mountains, and a large amount of damage to natural and anthropogenic objects. These natural phenomena are clearly visible in the southern mountainous and foothill regions of the Jizzakh region. Because this main part of the region is located in the Turkestan-Malguzar-Nurota mountain, foothill and intermountain regions. This intermountain region is a water catchment area with a unique saturation basin. These mountainous regions are not only water catchment areas, but also one of such periodic phenomena, earthquakes, are often observed here. The natural process of an earthquake is also considered the most destructive natural phenomenon, which often occurs at unexpected times and causes a lot of damage in a short time. This is especially common in the mountainous southern Bakhmal and Zamin districts of the region. Today, another such periodic phenomenon in the region is the occurrence of weather elements in unexpected areas, unlike in previous years.

The main sources of water resources in the region are natural fresh water from rivers, streams, springs, reservoirs, lakes, as well as fresh and moderately mineralized water located underground.

The distribution of surface water resources in the region by river basins is discussed below. It is known that the internal waters of the Jizzakh region are very unevenly distributed due to its climatic and orographic features. Running water is very rare in the large plains that occupy almost two-thirds of it. There are two main large rivers in the region that are fed by snow and rainwater, the Sangzor and Zaminsuv rivers. Since these rivers are fed by snow and rainwater, the high water period falls on March-May. In the watersheds of the northern slopes of the Sangzor and Nurota mountain ranges, there are a total of 938 different small streams, rivulets and springs, 846 of which reach a length of up to 10 km. Of these, 34 are 20 km long. Only the Sangzor and Zamin rivers are more than 50 km long [2].

In addition, several reservoirs have been created in the region, which are widely used for irrigation in agriculture, and small recreation areas have been built around these reservoirs.

As is known, as a result of the influence of natural factors on the Earth's surface, climate is constantly changing, and over the past 10 million years, as a result of the development of global cooling, large areas of mid-latitudes have been covered with ice. This process is associated with the periodic oscillation of the position of the Earth's surface relative to the Sun. The current climatic conditions prevailing on our planet arose mainly in the recent past, after the ice ages that occurred in the lower, middle and upper parts of the Quaternary period. Although the main

source of life on Earth is solar energy, the importance of air masses moving in the atmosphere in the formation of climate and the formation of inland waters plays a special role.

By the middle of the 20th century, climatic conditions on Earth were subject to strong anthropogenic influence. This influence, as a result of the increase in the number of people on Earth, the constant increase in demand and need for natural resources, the development of the scientific and technological revolution, and the rapid increase in the power of human influence on nature, led to changes in the Earth's climate, and this process is still continuing with intensity, although such climate changes cannot fail to affect changes in the amount of precipitation, the saturation of rivers, and the amount of runoff.

In particular, in the Jizzakh region, it is observed that air masses such as temperature, precipitation, and wind occur at atypical times that do not correspond to previous years. The occurrence of such natural geographical processes also affects the formation of inland waters of the region (rivers, lakes, reservoirs), which further complicates the level of their use by people for economic purposes.

It is worth noting that there are very different changes in the northern and southern regions of the region, that is, some years are sharply hot and dry, while some years are very wet and flood damage is observed. It is worth noting that experts in the field have noted that, as a result of periodic events, in particular, the entry of hot and dry air from Iran in 2019-2020, and the extremely severe cold in 2023, low-pressure depressions occurred in several places. In the regions of the Turkestan and Chumkortog mountains, in the north, Malguzar, Nurota, Koytash mountains of the region, there are many small rivers, large and small streams and ravines that periodically dry up in some cases and increase in some years. For this reason, many artificial hydrographic networks (small reservoirs) have been built in the foothill plains of the mountains. These networks take water from rivers, streams and springs and supply the surrounding areas with water. They consist of reservoirs, irrigation canals, ditches, as well as ditches and collectors. As can be seen from the chronology of various climate changes in the region during cyclical periods, the evaporation process is very strong in the plains and especially in the foothill plains. Because the waters formed in the mountains spread here through the extensive irrigation canals and ditches to the vast fields, most of which are directly transpired (evaporated) into the atmosphere from the water surface, soil surface and plants, as a result of which the water balance in the basin decreases [6]. These processes, together with changes in landscape components, can be considered as a product of a natural factor formed under the influence of the periodic law in the region.

Also, another aspect of the periodic law is that the distribution of internal waters of the Jizzakh region depends primarily on the surface structure of the area, its geomorphological condition and the composition of the underground soil layers. Natural water resources are unevenly distributed in the region, river networks are well developed in mountainous areas, and rivers are almost absent in the plains. In most cases, water from the Syrdarya, Sangzor, Zominsuv rivers and the Zarafshan River through the Tuyatortar Canal is used for irrigation.

Considering the natural geographical location and geomorphological structure of the territory of Jizzakh region, the region includes some parts of the Forish, Zamin, Mirzachul natural

geographical regions of Mirzachul district and the Gallaorol and Sangzor natural geographical regions of Middle Zarafshan district [5].

The northern part of the Forish, Zamin, Mirzachul natural geographical regions of the region has a unique genetically interconnected relief with a wide plain of the Mirzachul plain, and the southern part has foothill heights and depressions, and this genetic connection often causes conflicting opinions in geomorphological studies. Because the southern part forms a high-altitude zone up to 4000 meters, while the northern part, on the contrary, forms a plain and lowland. The altitude of its northwestern part above sea level is 230 m, the southeastern part is 350 m, and the height of the foothills in the southern part is 450-530 m. The main slope of the territory is directed towards a large, almost waterless, depression-like area, which affects the movement of natural and artificial groundwater, creating different levels of salinity in the landscapes.

It should be noted that since the water of the Syrdarya River has long seeped into this plain, the Mirzachul plain absorbs 150-200 thousand tons of salt from these seepage waters (including natural precipitation) every year, and due to the almost complete absence of natural slopes, many thousands of tons of salt are discharged into irrigation systems in the plains every year. As a result, it leads not only to salinization of irrigated areas and surface waters, but also to soil salinization and a decrease in land productivity. Therefore, when analyzing the Jizzakh region from a geomorphological perspective, a constant underground flow is observed from high mountainous areas to low plains. This can be attributed to factors such as the fact that the region is located at the lowest point in geological and geomorphological terms, all groundwater and surface waters in the region flow to the north, the movement of water not only from the region but also from the Chordara reservoir in the neighboring Republic of Kazakhstan, and the leakage of wastewater from the entire Jizzakh and Syrdarya regions through collectors [1]. The territories of the Gallaorol and Sangzor natural geographical regions within the Middle Zarafshan district, according to their geomorphological structure, gradually decrease from the south (4000 m) to the northwest (600-400 m), which creates a natural drainage of groundwater flow, and there is no need for artificial drainage. Therefore, there are few irrigated areas in these regions of the region, and more marshy lands are widespread.

The law of periodicity states that each period of rotational motion consists of the simplest unit of motion, but the exact recurrence of periods is not observed. Rotational motion occurs as a result of a rhythmic, gradual change in the scale of energy and matter flows directed in one direction, which in turn leads to a change in the composition and structure of geospheres. Also, as a result of the dynamic change of hydrological processes in the Jizzakh region, as a result of the influence of various natural processes, both rhythmic and cyclic phenomena of various periodic patterns occur. This, of course, cannot but affect the hydrological and landscape characteristics of the region, requiring comprehensive research.

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