

THE IMPORTANCE OF THE CHANGE IN THE BALANCE OF WATER RESOURCES OF THE AYDAR-ARNASAY LAKES SYSTEM IN THE DEVELOPMENT OF FISHERIES

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Аннотация.

Айдар Арнасай кўли тизимидаги (ААКТ) сув балансини аниқлаш ва баҳолаш минтақада балиқчилик, экотуризм ва сув ресурсларидан самарали фойдаланиш учун муҳимдир.

Кўллар тизимидан чиқиш сувлари миқдори сув ҳавзасидан атмосферага буғланадиган сувлар, филтрация ва суғориш учун ишлатиладиган сувлардан иборат.

Мақолада муаллифлар томонидан олиб борилган статистик маълумотлар ва тадқиқотлар асосида 2004-2022 йиллар давомида ААКТ сув баланси миқдоридаги ўзгаришлар аниқланган ва баҳоланган.

Калит сўзлар: кўллар тизими, гидрология, сув сатҳи, майдони, сув ҳажми, кириш ва чиқиш сувлари, коллектор дренаж сувлари, инфильтрация ва сув баланси.

Аннотация.

Выявление и оценка водного баланса в системе озер Айдар-Арнасай (ААОС) имеет важное значение для развития рыболовства, экотуризма и эффективного использования водных ресурсов в регионе.

Количество выходной част воды в озерную систему составляют из воды, испарение в атмосферу, инфильтрации и расход на орошения.

В статье на основе статистических данных и исследований,

проведенных авторами, выявляются и оцениваются изменения в объеме водного баланса ААОС в период 2004-2022 годов.

Ключевые слова: озерная система, гидрология, уровень воды, площадь, объем воды, входные и выходные воды, коллекторно-дренажные воды, инфильтрация и водный баланс.

Annotation.

Identification and assessment of water balance in the Aydar Arnasay Lake System (AALS) is important for the development of fisheries, ecotourism and efficient use of water resources in the region.

The amount of water discharged from the ash system consists of water from the water body into the atmosphere, which is used for infiltration and irrigation.

The article identifies and evaluates the changes in the amount of water balance of the AALS during 2004-2022 on the basis of statistical data and research conducted by the authors.

Key words: lake system, hydrology, water level, area, water volume, inlet and outlet waters, collector drainage waters, infiltration and water balance.

1. Introduction

The Aydar-Arnasoy Lakes system is the largest body of water in what is now the Republic of Uzbekistan. Today, the lake system has accumulated more water than any reservoir in the Region [1].

The Aydar-Arnasoy lake system (including Aydarkul, Tuzkon and Arnasoy reservoirs) is located 250 kilometers from Tashkent, in the middle part of the Syrdarya River, south of the Chordara reservoir, on the territory of Jizzakh and Navoi regions of the Republic of Uzbekistan. This water system was formed in the middle of the twentieth century, and in recent years its formation has gone through several stages, and each stage was determined by a separate direction and level of environmental and economic activity [1,2].

Part of the water balance in the Aydar Arnasoy Lakes system includes

Syrdarya water entering Lake Arnasoy from the Chordara reservoir, collector-drainage water being dumped into the lake bottoms, atmospheric precipitation falling on the surface, and groundwater directly joining.

Exit waters from the lake system include evaporation from the surface of the water into the atmosphere, water used for irrigation, infiltration water that is absorbed underground. The assessment of the amount of input and output water gives the water balance in the Lakes system [3].

In the research work noted above, the dynamics of change in the balance of AALS Water Resources, methods for calculating water balance and their importance in the development of fisheries have not been fully studied. In the future, it will be necessary to determine and assess the water balance of the lake system and develop scientific and practical recommendations for the development of fisheries in the lake system in the protection and sustainable use of the AALS Water Resources, which are important for the region.

The purpose of this work is to calculate the mictor of entry and exit waters into the AAC, calculate the water balance of the lake system by determining the dynamics of change in water resources, and develop recommendations in the development of Fisheries.

2. Experimental space.

The Aydar-Arnasay lake system is located in the middle reaches of Syrdarya, south of Chardara reservoir, adjacent to the Kyzylkum steppe of the Southern Mirzachul low plain, in the territory of Jizzakh and Navoi regions of the Republic of Uzbekistan. AALS is considered to be the second largest closed body of water in the post-insular region to date in terms of water content. The size of the surface portion of the lake system leads to higher evaporation and remains an important factor in climate change in the region today.

The water balance of the Aydar-Arnasoy lake system was determined by calculating the amount of water entering and exiting the lake system.

The water balance in the Aydar-Arnasoy Lakes system (Table 4),

compiled for 2004-2022, shows that the water balance indicator increased in 2004 and 2012. As of 2012, the amount of balance was decreasing due to the decreasing amount of Syrdarya water being pumped through Chardarya reservoir. The Collector-drainage water flowing into the lake system did not have a noticeable effect on the water balance, that is, the fluctuation of collector-drainage Waters did not allow the lake system to sharply reduce the water level, area and total volume of water.

In general, the origin of imbalances in the water balance is evidenced by the insufficient accuracy of monitoring carried out in the system of lakes. At the moment, an unfavorable situation has arisen in the system of lakes, one of the largest fishing reservoirs in Uzbekistan, which is important for nature-building not only for the Jizzakh and Navoi regions, but also for our entire country, requiring a high level of decision-making in time.

An analysis of the current state of the Aydar-Arnasoy lake system on the basis of our research materials showed that since 2014, a decrease in the amount of water balance is accompanied by a phase of lowering the water level in the lake system and clear signs of the nature of water use and deterioration of the environmental condition of neighboring areas. It is characterized by a gradual increase in the salinity of the water of the lake system, a decrease in fish productivity, the formation of Disturbed Areas of the drained bottom and the salinity of the shores.

Conclusion.

It is important to analyze, study and implement various options for regulating the water balance of different parts of the lake system.

The AALS water balance varies depending on the water in and out of the Lakes system. Research studies examined the water balance of the lake system between 2004 and 2022.

The amount of water entering AALS in 2004 was 5075,5 mln. m³, with an output of 3971,0 mln. m³, the amount of balance +1104,5 mln. m³, the

amount of access water in 2008 was 3812,8 mln. m³, output water 4149,3 mln. m³, balance amount -336,5 mln. m³, the amount of access water in 2012 was 4375,2 mln. m³, output water 4043,0 mln. m³, the amount of balance +550,2 mln. m³, the amount of access water in 2014 was 2949,3 mln. m³, output water 4166,5 mln. m³, the amount of balance -1217,2 mln. m³, the amount of access water in 2016 was 3098,2 mln. m³, with an output of 3922,8 mln. m³, balance amount -823,8 mln. m³, the amount of access water in 2018 was 3035,4 mln. m³, the output water is 3898,2 mln. m³, balance amount -862,8 mln. m³, the amount of access water in 2020 is 2552,1 mln. m³, with an output of 3946,7 mln. m³, the amount of balance -1393,9 mln. m³, the amount of access water in 2022 is 2743,4 mln. m³, with an output of 3977,7 mln. m³, the amount of balance -1234,3 mln. m³.

The main environmental factors affecting the water balance of the lake system are the years of the deposition of Syrdarya water through the Chordara reservoir, and the high evaporation from the water surface of the lake system into the atmospheric air causes the outflow waters to exceed. As a result, the water in small ponds around the lakes evaporates, causing an increase in saltwater areas, and the ecological situation worsens.

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