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COMPOSITION OF THE AIDAR-ARNASOY LAKE SYSTEM AND ITS MONITORING

***Annotation.** The article provides an annual analysis of the water content of the Aydar-Arnasay lake system (AALS) in the Republic of Uzbekistan (spring-autumn 2021). During the monitoring, heavy metal ions in water (ISP-OES) were analyzed by optical emission spectrometric method.*

***Keywords.** Aydar-Arnasay lake system (AALS), lake water, ecological condition, (ISP-OES) optical emission spectrometric method, heavy metals*

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СОСТАВ АЙДАР-АРНАСОЙСКОЙ ОЗЕРНОЙ СИСТЕМЫ И ЕГО МОНИТОРИНГ

***Аннотация.** В статье приводится ежегодный анализ водности Айдаро-Арнасайской озерной системы (ААОС) в Республике Узбекистан (весна-осень 2021 г.). Во время мониторинга ионы тяжелых металлов в воде (ИСП-ОЭС) анализировали оптико-эмиссионным спектрометрическим методом.*

Ключевые слова. Айдар-Арнасайская озерная система (ААСС), вода озера, экологическое состояние, (ИСП-ОЭС) оптико-эмиссионный спектрометрический метод, тяжелые металлы

On a global scale, due to the increase in the volume of water in the Aidar-Arnasay lake system (AALS) in the context of global climate change, the negative impact of the lake system on the environment due to flooding of pastures around the lakes, the quantity and quality of water resources, and the ameliorative state of irrigated lands has deteriorated. The constant inflow of mineralized collector-drainage water from the irrigated territories of the Jizzakh region has led to a gradual increase in the level of mineralization of water resources in the AALS.

In this regard, it is necessary to analyze the extreme conditions (rise and fall of water levels) of the Aydar-Arnasay lake system, which is a unique object, to study, identify and evaluate the dynamics of perennial hydrology and hydrochemical changes of water resources.

To do this, it is important to study the dynamics of changes in the ecological state of water resources around the AALS.

Information about the ecosystem, fauna and flora of the Aydar-Arnasay lake system, water quality indicators was provided by foreign scientists M.Groll, S.Vahyuni, K.Rodina, Zh.F.Kreto, B.Vilkomirsky, geographers of our country L.A. Alibekov, A.A. Rafikov, S.B. Abbasov, N.R. Alimkulov, R.A. Kulmatov, hydrologist A.M. Nikitin, N.E. Gorelkin, N.G. Vereshchagina, T.V. Kudyshkin, E.I. Chembarisov, geobotanist G.Yu. This is covered in scientific studies by Kadyrov and a number of other scientists.

The AALS water quality indicators were analyzed in 2010 by R. Kulmatov, in 2011 by Belikov, N. Mullaboev, in 2019 by A. Tailakov.

In the above studies, the monitoring of heavy metal ions in water by increasing the water level of the lake system or reducing the volume of water was not studied.

Therefore, in order to scientifically study the Aydar-Arnasai lake system and its coastal areas, scientific research is being carried out on the topic “Detection and monitoring of heavy metal ions in the water of the Aidar-Arnasai lake system”.

In order to study the water content of the Aydar-Arnasay lake system, the amount of some heavy metals in addition to the main ions in the lake water will be determined and the basic hydrochemical state of the lake will be assessed. These analyzes are necessary to study the effects of excess elements in the water on lake fish and some waterfowl.

The analysis of heavy metals in a water sample taken from AALS was determined by the Avio200 optical emission spectrometric method (ICP-OES) in the Chemical Analysis Department of the Laboratory of Experimental Biology of Gulistan State University.

The Avio™ system (Avio200) can perform even the most complex analysis. Efficiency and Flexibility for Liquid Samples.

After autumn, winter and spring rains, lake water delivered from AALS in April 2021 and heavy metals in a water sample taken in October 2021 after the summer water evaporated were directly analyzed by filtering the water sample.

The solution in the flask was placed in special test tubes in the auto sampling section and put for analysis. The prepared sample was analyzed on an Avio200 ISP-OES optical emission spectrometer with inductively coupled plasma (Perkin Elmer, USA). The accuracy of the device is high, allowing to measure elements in solution with an accuracy of 10^{-9} g. The results of the analysis were as follows.

	Metals found in water	(11.04.2021)	(20.10.2021)	AR
1	Cr(mg/l)	0.002	0.0004	0,001
2	Co(mg/l)	0.002	0.001	0,001
3	Zn(mg/l)	0.003	0.002	0,01

4	Cu(mg/l)	0	0	0,001
5	V(mg/l)	0.008	0.015	0,001
6	Mo(mg/l)	0.020	0.027	0,25
7	Sn(mg/l)	0	0	0,00001
8	Pb(mg/l)	0	0	0,01
9	Cd(mg/l)	0	0	0,001
10	Sb(mg/l)	0	0	0,01
11	Mn (mg/l)	0.0004	0.001	0,04
12	Ni(mg/l)	0	0	0,01
13	Fe(mg/l)	0.039	0.018	0,5
14	Al(mg/l)	0	0	0,04
15	Ba(mg/l)	S4	0.006	0,7
16	Hg(mg/l)	0	0	0,0001
17	Ag(mg/l)	0	0	0,05

Based on the above analysis, the State Committee for Ecology and Environmental Protection of the Republic of Uzbekistan uses Aidar-Arnasay lake system (AALS) in the development and implementation of water protection measures, as well as the rational use and development of biological resources.

As a result, the Aidar-Arnasay lake system will be able to assess the volume and quality of water sources, predict the amount of water and achieve stability of water supply, improve and maintain the ecological situation around the Aidar-Arnasay lake system, develop biological resources, ensure food security, develop practical work aimed at developing industries.

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