

HYDROGEOCHEMICAL STUDIES AND ZONING GROUNDWATER OF QUATERNARY DEPOSITS (ON THE EXAMPLE, THE TASHKENT REGION)

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ABSTRACT

The underground waters of the Pritashkent Artesian basin differ in different hydrogeochemical situation. On the one hand, the rapid development of resorts, sanatoriums, health resorts, as well as bottling since the early 50 s has led to a decrease and change in the chemical composition of the upper Cretaceous aquifers, and on the other hand, natural waters suitable for drinking water supply are widely distributed in the upper part of the section, which are constantly subject to man-made processes. This situation has led to a change in the chemical composition of groundwater. The study of the processes of formation of the chemical composition of groundwater and the peculiarities of their distribution in the plan and section of the studied territory should be an important element of most types of hydrogeological studies - hydrogeological survey, exploration of fresh groundwater deposits and their organization of a monitoring network.

Keywords: hydrogeochemistry, mineralization, groundwater.

INTRODUCTION

The extreme complexity of the hydrogeochemical situation requires the formulation of special studies aimed at studying the processes of formation of the chemical composition of the natural waters of the region. Over the years, S.L. Shvartsev, O.G. Savichev, N.V. Guseva, M.E. Korolev, V.A. Krotova, V.G. Popov, N.M. Porfiriev, V. I. Vernadsky, F. P. Savarensky, G.N. Kamensky, A.M. Ovchinnikova, N. I. Tolstikhina and others have made a great contribution to the study of this problem.

We can say the issues of practical use of groundwater, the number one issue is drinking water supply. This question has two aspects. The first is to provide the necessary volumes of water. The second aspect — water quality and monitoring it - is the task of hydrogeochemistry.

The term “hydrogeochemistry” should be understood as the science involved in the study of the underground hydrosphere of the Earth.

Hydrochemistry is a branch of hydrology that studies the chemical composition of natural waters and the patterns of its changes under the influence of physical, chemical and biological influences.(1).

So, “hydrogeochemistry” is a science that arose at the junction of hydrogeology and geochemistry and deals with the study of the material (ionic, gas, isotopic) composition of groundwater, the processes of its formation, the history and migration of chemical elements in the underground hydrosphere.

**Classification of groundwater
1-according to the degree of mineralization**

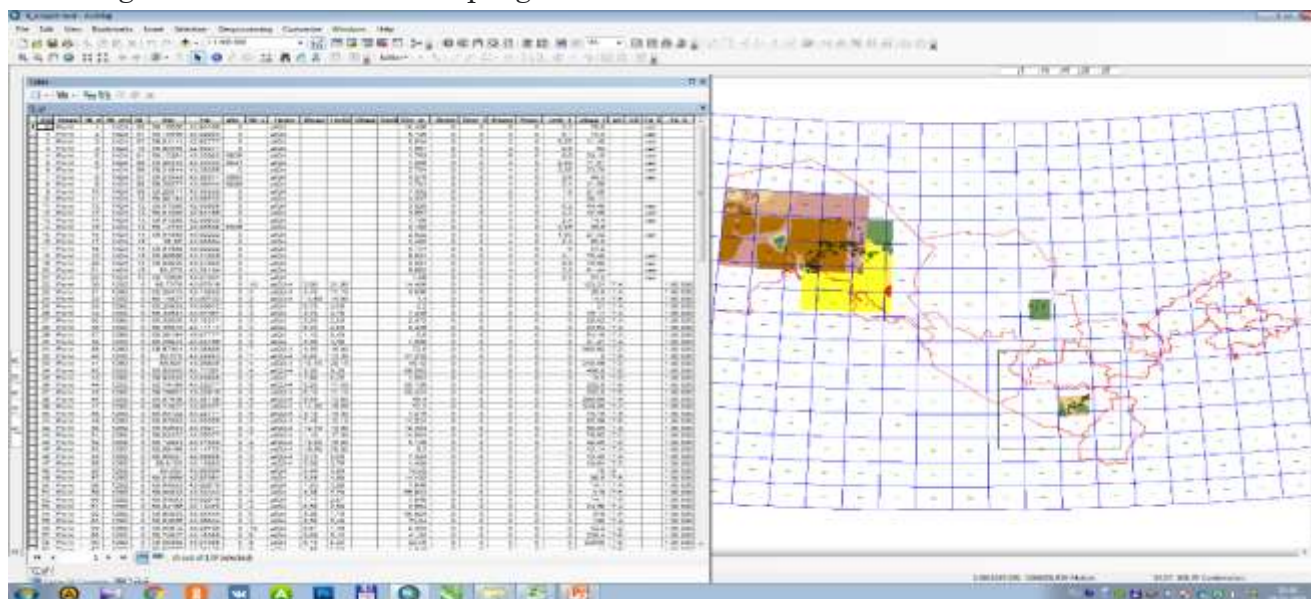
<i>Вид воды</i>	<i>Степень минерализации</i>	<i>Преобладающие ионы</i>	<i>Химический тип воды</i>
Пресные	0,1	HCO ₃ , CO ₂ , Ca	Гидрокарбонатно-кальциевый
Солоноватые	1-3	SO ₄ , реже Cl	Сульфатный, хлоридный
Соленые	3-35	SO ₄ , Cl	Сульфатный и хлоридный
Рассолы	>35	Cl, Ca, Mg, Na	Хлоридно-натриевый

The tasks of hydrogeochemistry are the development of methods for analyzing the chemical composition of groundwater, assessing the influence of various natural processes on the formation of the chemical composition of groundwater, solving balance equations of dissolution and precipitation of minerals and dissolution of gases.

Everywhere in nature we encounter phenomena of zonality. Climatic zonality, vegetation zonality, etc. are widely known. Zonal phenomena are also widespread in hydrogeology. Hydrogeochemical zonality is most studied by the example of groundwater, as well as deep groundwater within the platforms.

To study the hydrochemical zonality and the state of groundwater, the stock materials of the study of the passport parameters of wells were reviewed, some of which are entered into the GIS system and all intermediate hydrogeochemical databases of sites on the territory of the Republic of Uzbekistan are studied and maps of chemical composition are compiled separately for each region. (2)

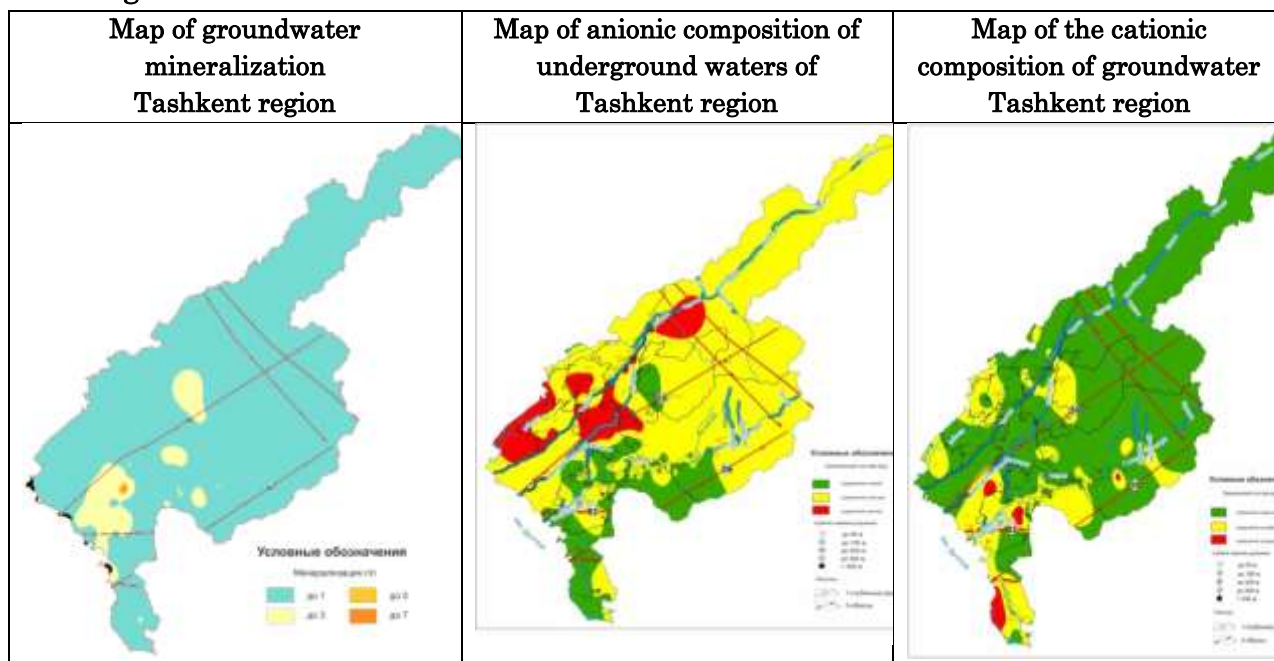
After viewing the stock materials of hydrogeological maps on a scale of 1:200000, these maps were registered under the GIS program.



The conditions of groundwater in the areas of the Tashkent region have been studied

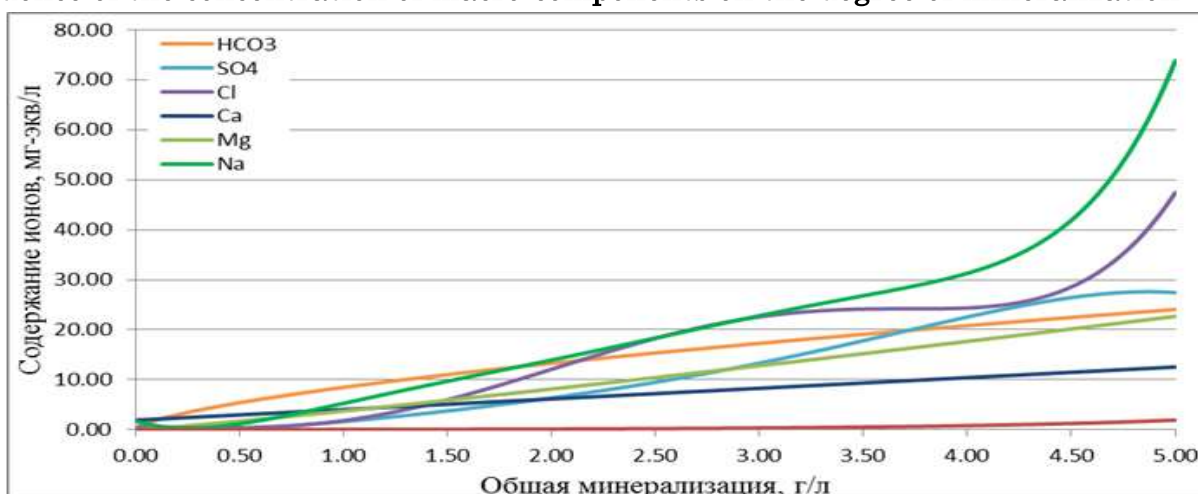
Maps of mineralization, anionic and cationic composition of groundwater have been compiled using the example of the Tashkent region. According to the available data of the Tashkent region of the north-western and north-eastern parts, the mineralization of groundwater ranges from 0.2 to 3 g/l. In the southeastern part, groundwater is characterized by increased mineralization up to 5 g/l with a significant content of Cl(SO₄) - Na(Ca) throughout the region.

Mineralization content, predominance of chemical composition by anions and cations of the Tashkent region



Based on our data, we can conclude that the higher the degree of mineralization of groundwater, the higher the level of sodium and chloride, and accordingly, the weak manifestation of hydrogen in the water content may be associated with the features of the geological structure of the earth, the level of groundwater, their lithological composition, filtration coefficient - permeability of rocks.(3)

Dependence of the concentration of macro-components on the degree of mineralization



The mineralization map of quaternary sediments was compiled from the MPC of the Republic of Uzbekistan (g/l). The features of the chemical composition and processes of interaction of groundwater with rocks are studied. Maps have been compiled using GIS technologies (ArcGIS) of the sites Map the predominance of chemical composition by quaternary sediment anions has been compiled with a predominance of bicarbonate, sulfate and chloride composition. Map the predominance of the chemical composition of the cations of quaternary sediments is composed with a predominance of sodium, calcium and magnesium composition.

Thus, studying the state of groundwater, looking at stock materials, we can say about the hydrogeochemistry of zonality in the studied area. The chemical composition of groundwater, the processes of its formation, the conditions of nutrition, movement, discharge of groundwater, the features of the host environment, the history of the development of the region, etc. the history of migration, chemical elements in the underground hydrosphere.

LITERATURES

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