

Comparative analysis of the water quality of rivers with different types of sources on the basis of monitoring data in the Republic of Uzbekistan

Razikova Iroda
PhD student

**Department of Environmental Pollutions
Research and Prediction**

Hydrometeorological Research Institute (NIGMI)

Introduction

Currently one of the major problems in the Central Asian region is the use and protection of water resources. In the arid climate of Central Asia water resources are key factor to sustain the natural balance of natural ecosystems and socio-economic development in most parts of the region. One of the most pressing environmental problems is the problem of fresh water.

Runoff of rivers of Uzbekistan:
melting of glaciers and seasonal snow, rain
and underground inflow

Uzbekistan rivers by the type of water
sources divided to rivers of:

- * *snow*

- * *snow-glacier*

- * *glacier snow*

- * *snow-rain*

The rivers selected for comparative analysis are:

Surkhandarya River - snow type of water source

Karadarya River - snow-glacier type of water source



Surkhandarya river located in the south of Uzbekistan, and the river **Karadarya** river - the north-east, in the Fergana Valley. Runoff of the **Surkhandarya** mainly composed of runoff and **Tupolang** and **Karatag** rivers. The total runoff of river in the upper reaches of the **Surkhandarya** from May to September is much lower overall flow of the two small rivers. On the contrary, the total runoff of the river in October and April, just slightly less than the total runoff or even above them.

Karadarya river basin occupies the eastern part of Fergana Range and the northern slopes of the Altai Mountains. Karadarya is formed by the confluence of Tar and Karakuldja rivers. From its source to the outlet in the Fergana Valley Karadarya takes two major tributaries: Yassy river and Kurshab river. Upon emerging from the mountains of Karadarya extensively for irrigation network of irrigation canals and the says, of which the largest are the Great Fergana Canal, Shaarihansay, Andizhansay (left) and channel Pakhtaabad.

At present in Uzbekistan for a comprehensive assessment of water quality of water bodies used the water pollution index (WPI) by the six indicators: dissolved oxygen, biochemical oxygen demand (BOD), and four substances with the highest observed value than their MPC_i .

$$WPI = \frac{1}{6} \sum_{i=1}^6 \frac{C_i}{MPC_i}$$

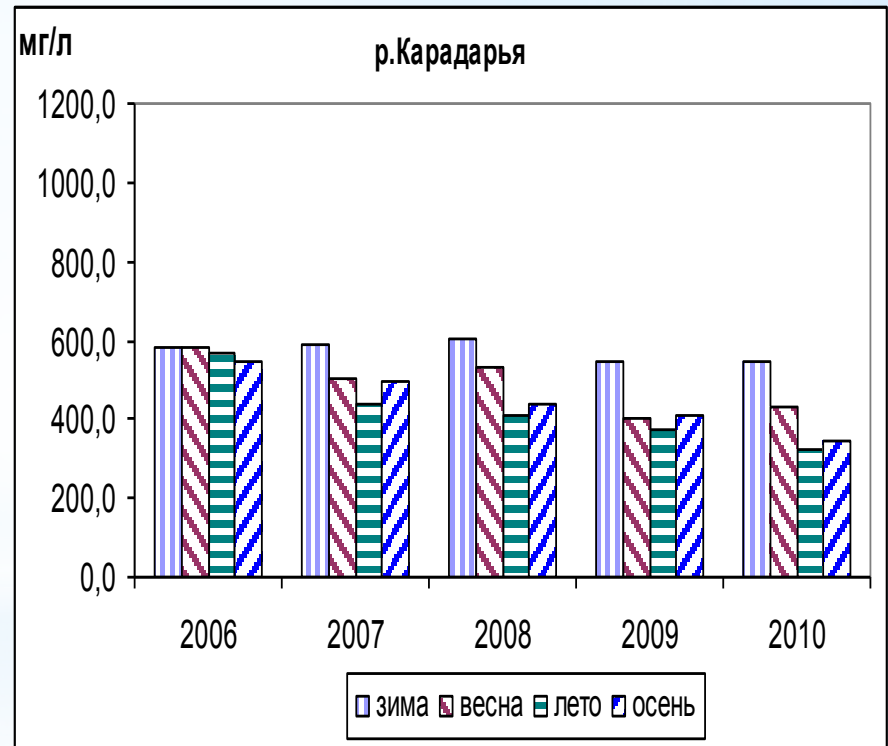
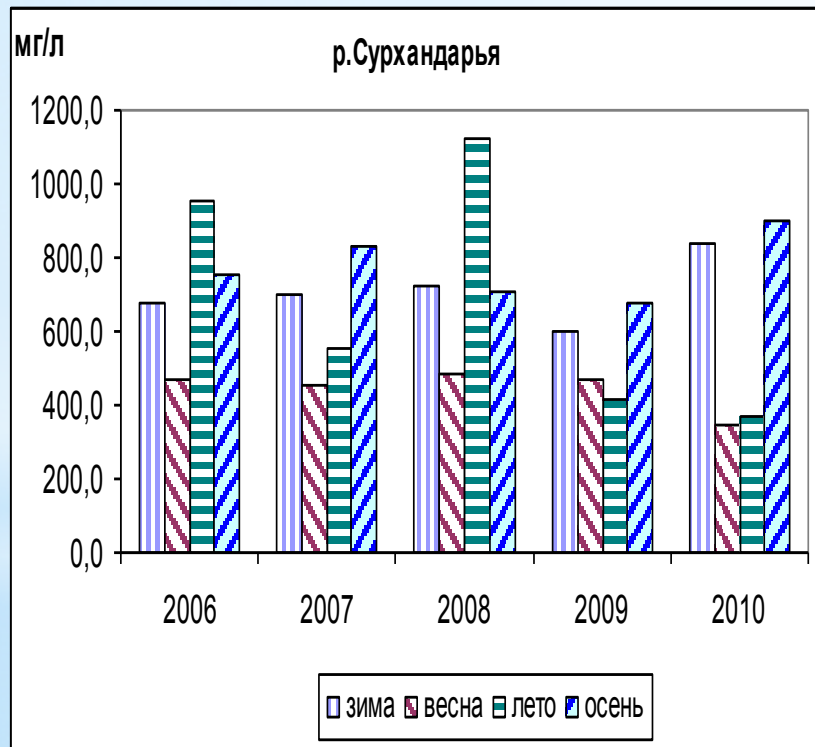
where:

C_i - concentration of a component or value;

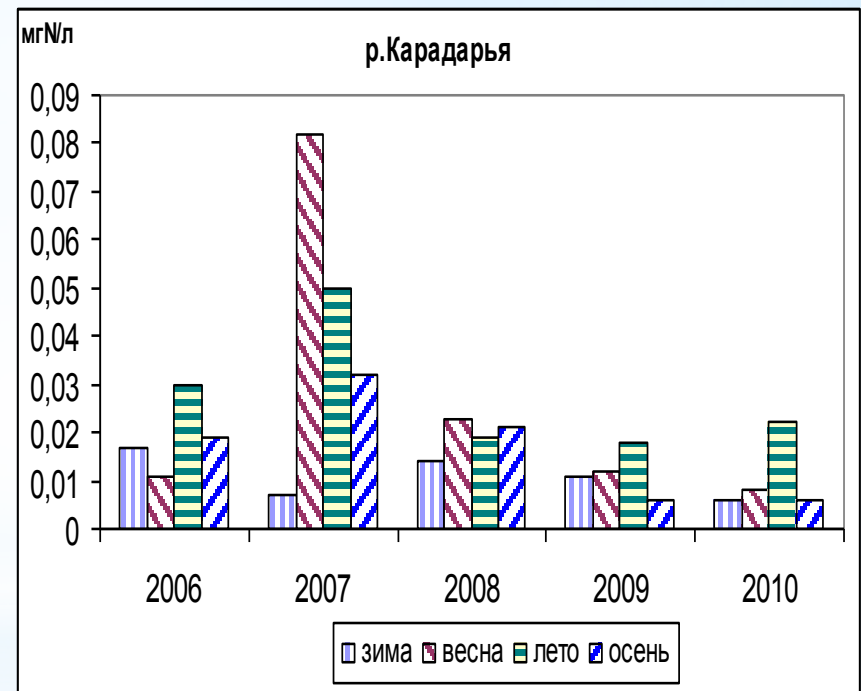
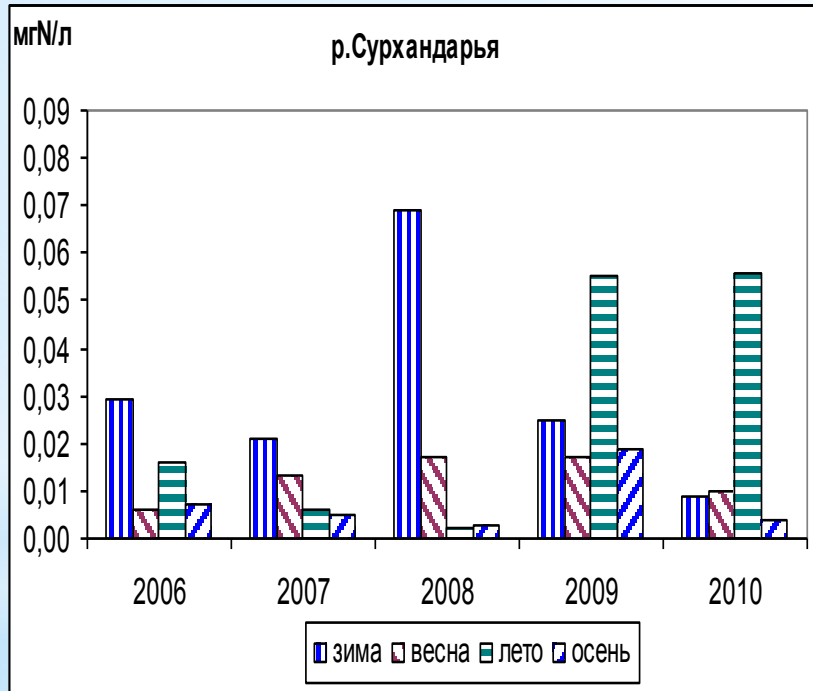
MPC_i - set value for the type of water body,

6 - number of indicators used to calculate the index.

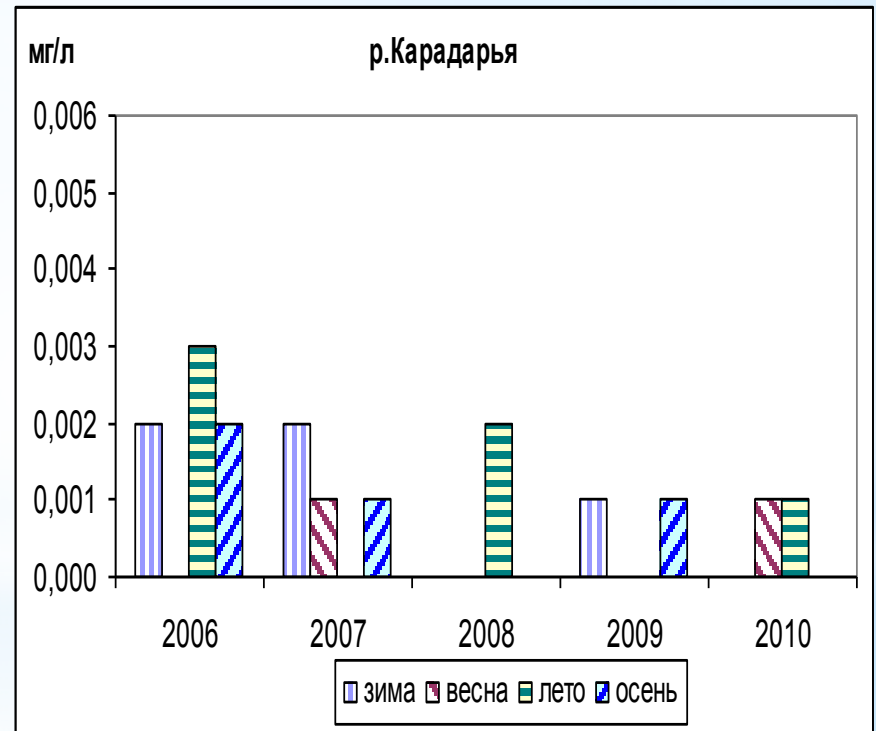
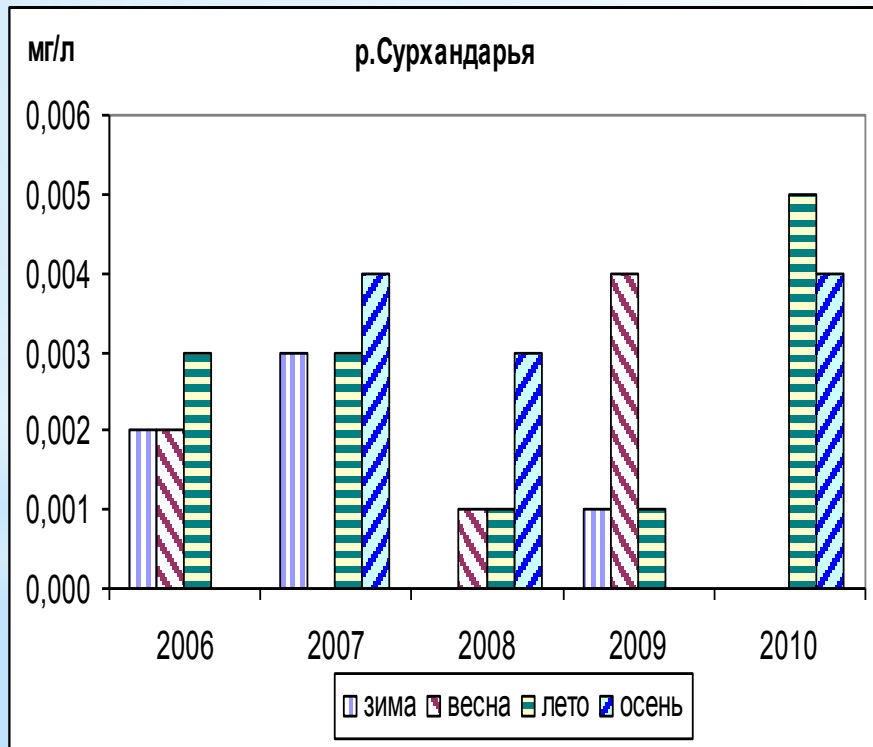
Changes of mineralization in the rivers as consistent with seasons of year (2006-2010)



Changes of nitrite nitrogen in the rivers as consistent with seasons of year (2006-2010)



Changes of phenols in the rivers as consistent with seasons of year (2006-2010)



Comprehensive assessment of surface water quality of Karadarya and Surkhandarya rivers for 2006 - 2010

River, monitoring point	Water pollution index (WPI)				
	<u>2006</u> waterc lass	<u>2007</u> waterc lass	<u>2008</u> waterc lass	<u>2009</u> waterc lass	<u>2010.</u> watercl ass
Surkhandarya, Shurchi	<u>1,13</u> III cl.	<u>1,09</u> III cl.	<u>1,20</u> III cl.	<u>1,09</u> III cl.	<u>1,19</u> III cl.
Karadarya, Andijan	<u>0,92</u> II cl.	<u>0,99</u> II cl.	<u>0,69</u> II cl.	<u>0,61</u> II cl.	<u>0,51</u> II cl.

Conclusion

Comparative analysis of the water quality of different types as an example of the rivers Surkhandarya and Karadarya shows:

- * the water quality of rivers by water pollution index (WPI) for 2006-2010 for Surkhandarya river corresponded to III class - moderately polluted waters, and the Karadarya river to class II - clean water;
- * the hydrochemical composition of the waters of these rivers are different;
- * the water quality of rivers in the observation points along the river corresponded to the different classes according to WPI.

Thank you for your attention