Errata

XXIX Danube Conference

XXIX Conference of the Danubian Countries on Hydrological Forecasting and Hydrological Bases of Water Management

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19. 10. 2021

In spite of all efforts, we have not been able to prevent an error in the proceedings of the extended abstracts of the XXIX Danube Conference. We would like to kindly ask users to take into account the error corrections below.
The corrected pages are available in the electronic version and are located at the end of this PDF file, which can be found on the website of the CHMI publishing house at:
https://www.chmi.cz/files/portal/docs/reditel/SIS/nakladatelstvi/publikace-ke-stazeni.html

Page 7
Adding a missing item to the end of the abstract list. This correction is related to the abstract on pages 127–129.
The corrected list is following:

Page 127–129
Adding the missing abstract.

Page 130
Moving the original page 127 with the following content to the page 130:

Local organizing committee

Jan Daňhelka
Petr Janál
Ondřej Ledvinka
Ivana Černá

International scientific committee

Jörg Uwe Belz (Germany)
Danko Biondić (Croatia)
Günter Blöschl (Austria)
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Plamen Ninov (Bulgaria)

Page 132
Correction of the number of pages to 132.

The corrected imprint is following:

Print: Tiskárna ČHMÚ, Na Šabatce 17, 143 06 Prague 4
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Modern intra-annual distribution of the seasonal river runoff at the Tisza sub-basin

Maryna GOPTSIY, Valeriya OVCHARUK, Oleg PROKOFIEV

Odessa State Environmental University, Ukraine, email: goptsiy-odeky@ukr.net, email: valeriya.ovcharuk@gmail.com

Introduction

According to the scheme of hydrographic zoning of the territory of Ukraine in accordance with the requirements of the Water Framework Directive of the European Union, nine areas of river basins and nine sub-basins have been identified (Khilchevskyi et al, 2019). One of the districts is the Danube basin, which has three sub-basins: the Tisza, the Prut and the Siret and the Lower Danube. This study examines the Tisza sub-basin. On the territory of Ukraine there is an upper, mostly right-bank part of the Tisza basin, which situated on the southwestern slopes of the Ukrainian Carpathians and the Transcarpathian lowlands. Within Ukraine, the Tisza is used for water supply, fish farming and recreation. The peculiarity of the study area is that the Carpathian Mountains protect the territory from the intrusion of cold air masses from the northeast and east. The rivers in question are characterized by a flood regime caused by melting snow and heavy rainfall in the spring (from February-March to June-July), as well as heavy rain and snow-rainfall during the rest of the year. Recently, a large number of studies have been devoted to assessing the impact of climate change on river runoff (Blöschl et al, 2017), in particular, possible changes in the structure of intra-annual runoff distribution Tisza sub-basin are of scientific and practical interest.

Methodology

To process the initial information, methods of hydrological-genetic and statistical analysis were used.

Results

The analysis of the intra-annual distribution of river runoff was carried out for catchments with an area range from 189 to 2870 km2. The calculation is performed for 3 time intervals: for the entire observation period (60-70 years); the period of the climatic norm (1961-1991) and period of climatic changes (1989-2015). At the first stage, the residual mass curves were calculated and constructed to analyze the cyclicity in fluctuations in the time runoff series (Fig. 1). Analysis of Fig. 1 shows that for the entire period and the period of the climatic norm, full cycles of water availability can be distinguished, which include both low-water and high-water phases; on the another hand, the period of climatic changes is characterized by a stable decreasing trend against the background of insignificant increases in certain years.

The calculation of the intra-annual runoff distribution was carried out for water management years, the beginning of which coincides with the beginning of the first flood month. For the rivers of the Tisza sub-basin, this is March (Fig. 2 a). The intra-annual runoff regime of the region under study is characterized by floods from March to August, and in some years to November-December. Analyzing the entire available series of observations for the considered catchments, it can be noted that the runoff in the spring season is 36-41% of the annual runoff, summer 15-27%, autumn 15-19% and winter 14-29%, respectively (Fig. 2 b). On the rivers in the eastern part of Transcarpathia, the largest runoff occurs in April, less often in May, and on the rivers in the western part of the region it is March. The average monthly runoff of the wet month is from 14% to 17% of the annual runoff.

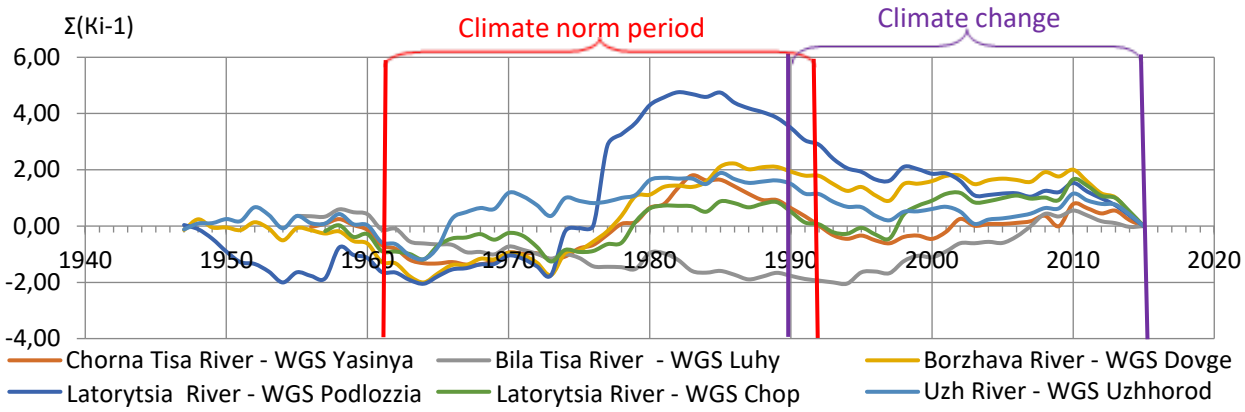

Fig. 1 Residual mass curves of water discharge at the rivers of Tisza sub-basin.

Comparison of the seasonal and intra-seasonal distribution of river runoff for the period of climatic normal and climatic changes showed that no significant changes have yet been observed, however, there is a slight increase in runoff in the autumn-winter period, which coincides with the data (Blöschl et al, 2017), which shows the shift maximum of runoff for the study territory at a later period.

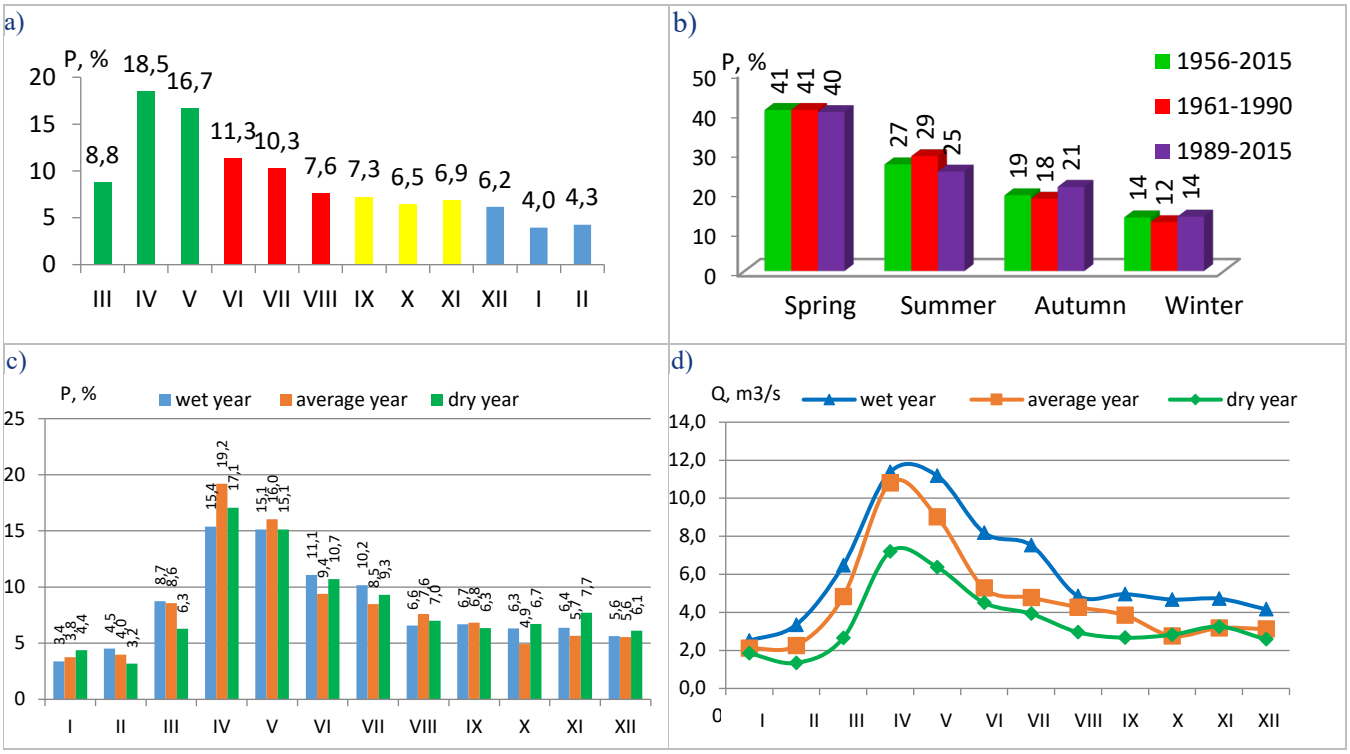

Fig. 2. Intra-annual distribution of seasonal runoff for the Chorna Tisa river catchment - WGS Yasinya: ***a)*** *average monthly water discharge for the entire observation period (1956-2015);* ***b)*** *seasonal runoff for different time intervals;* ***c)*** *intra-annual distribution of runoff for the models of typical years in%;* ***d)*** *intra-annual runoff distribution for typical year models, m^3/s.*

Conclusion

- Information on the intra-annual distribution of runoff is of significant applied importance for the economy of the region. Assessment of possible climate impacts should be carried out regularly for efficient and rational use of water resources;
- At the moment, no significant influence of climate change on the runoff of rivers in the Tisza sub-basin and its intra-annual distribution has been revealed, which is due to the peculiar conditions of the formation of river flow in the study area.

References

Khilchevskyi V, Grebin V, Sherstyuk N, 2019, Modern Hydrographic and Water management zoning of Ukraine's territory in 2016 - implementation of the WFD-2000/60/EC. Electronic book with full papers from XXVIII Conference of Danubian countries on the hydrological forecasting and hydrological bases of water management, Kyiv, 209-223.

Blöschl, G. et al. (2017) Changing climate shifts timing of European floods. Science, 357 (6351) 588-590.

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This publication has not been proofread. Individual authors are responsible for the content of their papers.

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