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Variability assessment of flood hazard indicators on the North Caucasus

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The result of maximum water levels variability analysis along with the information of the frequency of adverse and dangerous hydrological phenomena exceeding levels and fluctuations maximum amplitude of water levels are presented in this research. There are two periods of comparison of the water levels recorded at 146 hydrological gauges – 1926-1975 and 1976-2015. Statistical analysis of databases was selected as the main research method including agreement criteria with parametric and nonparametric criteria of homogeneity.

The recent rise in mathematical expectation of maximum water levels is a characteristic for all the North Caucasian rivers. Maximum water levels dispersion have a tendency to decrease in the south of the Black Sea Caucasian coast, the Psheha and the Belaya rivers, the Sulak and the Fortanga rivers, the Baksan upstream. The remaining gauges recorded an increase in water levels dispersion, which is the predominant trend for the North Caucasian rivers.

The frequency of the adverse events exceeding water levels reaches 50% on the Afips, the Belaya, the Kuma, the Laba, the Mzymta, the Ubinka and the Vulcan rivers. By the number of hazard levels exceeded, the areas adjacent to the Kuma, the Laba, the Psekups, the Pshish and the Ubinka are most susceptible to the floods.

Another part of the framework was connected with potential flood-affected region mapping over the North Caucasus. Thus, a map of potential flood zones caused by North Caucasian rivers was created according to maximum water levels recorded at 232 hydrological gauges.

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