DOI: https://doi.org/10.37162/2618-9631-2022-4-64-78

Long-term forecasting of spring runoff characteristics of the Tobol basin rivers / Akilina V.A., Borsch S.V., Simonov Yu.A., Khristoforov A.V., Yumina N.M. // Hydrometeorological researches and forecasts. 2022. No. 4 (386). P. 64-78.

For the first time, methods have been developed that allow obtaining a long-term forecast of the runoff layer for the second quarter and a forecast of the maximum water level for the spring flood period for seven rivers of the Tobol basin on March 25 every year. Both methods use linear empirical dependences of the predicted value on the maximum snow water equivalent averaged over the catchment area, the logarithm of the average water discharge for November of the previous year, and the average water discharge for the month preceding the forecast release date.

To estimate the parameters of these dependencies and verify the forecasts obtained with their help, data of long-term hydrometeorological observations for the period from 1968 to 2021 were used. The analysis of the series of test forecasts showed that both methods give quite satisfactory results for all seven river basins. The methods can be recommended for use in the system for operational hydrological forecasting in order to scientifically substantiate measures on using water resources of the Tobol basin rivers and protecting the population and economic facilities from inundations during the spring flood.

Keywords: flood, runoff layer, maximum water level, forecast, snow water equivalent, water discharge, empirical dependence, verification

Tab. 6. Fig. 3. Ref. 17.