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Numerical analysis of using deep learning in the development of long-term method of maximum water level forecast for several gauging stations of the Iset (Kataysk, Shadrinsk, Mekhonskoe) has been carried out. The possibilities of implementing two architectures of neural network model within the framework of using the same set of initial hydrometeorological observation data have been analysed in detail. It is shown that the transition to the new N-HiTS architecture allows increasing the correctness of the forecast on the validation sample in comparison with the previously used TFT architecture. Using cross-validation we obtained estimates of the classical statistical criterion of correctness of the developed method confirming the possibility of its use in operational practice for all three analysed gauging stations. Within the framework of the developed forecasting method the analysis of groundwater level observation data at groundwater wells of the Rosnedra system was carried out. It is shown that in a number of cases using such observation data allows significantly improve the correctness of forecast.

Keywords: hydrological long-term forecasts, flooding, hydrologic equation, regression equation, neural networks, water level, water regime, deep machine learning

Tab. 5. Fig. 8. Ref. 9.