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Autocalibration feasibility and urbanization dimension integration in regional hydrological model metqul.

The regional hydrological models become more and more important in changing land use and climate conditions. In Latvia after II World War hydrological research were developed by professor Ansis Ziverts. He developed two hydrological models: METUL (Krams, Ziverts 1993) and METQ (Ziverts, Jauja, 1999) both models shoved very good precision. Early versions of models were developed in FORTRAN programming language and were quite complicated in use. There was no possibility of auto calibration and graphical interface.

This paper presents first version of integrated METUL and METQ models named METQUL with auto calibration feasibility and graphical interface. Early versions of models were developed for pure natural areas. However by fast urbanization of natural areas there is need to apply this land use dimension in hydrological models. As new component of model METQUL is integrated urbanized sub basin option.

To test the best approach to auto calibration Nelder-Mead; Genetic; Levenberg-Marquardt; Quasi-Newton (BFGS); Quasi-Newton (DFP); Conjugate gradient (Fletcher) and Conjugate Gradient (Polak) optimisation methods were tested. The first result of applied auto calibration methods shows that Nelder-Mead optimization method is most effective and precise for applied data set.