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PROBLEM WITH THE USE OF COMPUTER MODELS IN WATER MANAGEMENT IN THE OUTHER CARPATHIANS (FLYSH) – AN EXAMPLE OF THE KŁODNE VILLAGE

Summary

Numerical modelling is a frequently used tool in the assessment of both available groundwater resources and for optimization of water management in shortage areas. Field studies in the Kłodne and Męcina area were carried out in December 2012, in the period of low water level after a long term drought. Archive and collected data on groundwater levels and flows in streams were the base for creation a one-layer steady state hydrodynamic model of the local area. Possibilities of increasing aquifer exploitation in the study area were evaluated with the finite difference method in Visual MODFLOW V.4.2 package. Modelling the Carpathians gives rise to many problems. First problem with model construction was the description of geological structure, which resulted in low fidelity model. Study area has a complicated geological structure with large part of the active landslide. Flysch Carpathians are characterised by a lack of continuity of aquifer structures but the software allows to characterise only continuous layers in the model. Furthermore, real groundwater intake was burdened by high uncertainty. Specific water use is registered. Problematic was to estimate unregistered exploitation by private farmstead wells fairly widespread in the study area.

Key words: Flysch Carpathians, numerical modelling, water management