

There is a number of hydrological models with a wide range of applications. With its development, models have recently become an important tool for hydrologists, water managers and environmentalists in the design and operational planning. We have to bear in mind that it is only a simplification of the complexity of the system and it can not include all of the variables. For this reason it is appropriate to model results compared with the measured data. In my diploma thesis I chose SWAT model because it has been positively evaluated by other users and it is compatible with ArcGIS 10.1.

The diploma thesis deals with the use of geographic information systems (GIS) and modeling techniques based on SWAT (Soil and Water Assessment Tool) for evaluation of surface flows of nitrates in Rakovnický brook water basin in hydrological year 2000 with focus on point and non-point sources of pollution. For the spatial data is used ArcGIS 10.1 with the support of basic map layers ZABAGED and DIBAVOD and available aerial photographs and satellite scenes from LANDSAT. This diploma thesis draws on the project GAUK, which took place in the Rakovnický brook in years 1998 – 2000 and its aim was to evaluate total physical – chemical parameters of the Rakovnický brook.

Model SWAT has proved very difficult and sensitive to the input data. Rakovnický brook basin is highly anthropogenic influenced; part of the flow was concreted and straightened. After manual calibration model provided results generally consistent with measured data, but we can not expect the exact course of values, because of other factors.