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APPLICATION OF THE SWAT MODEL IN THE PINIOS RIVER BASIN UNDER DIFFERENT LAND-USE SCENARIOS

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EXTENDED ABSTRACT

This paper investigates the hydrological effects of specific land use changes in a catchment of the river Pinios in Thessaly (Ali Efenti catchment), through the application of the Soil and Water Assessment Tool (SWAT) on a monthly time step. The model's calibration efficiency is verified by comparing the simulated and observed discharge time series at the outlet of the watershed, where long series of hydrometrical data exist. The model is used to simulate the main components of the hydrologic cycle, in order to study the effects of land use changes. Three land use change scenarios are examined, namely (A) expansion of agricultural land, (B) complete deforestation of the Trikala sub-basin and (C) expansion of urban areas in the Trikala sub-basin. All three scenarios resulted in an increase in discharge during wet months and a decrease during dry periods. The deforestation scenario was the one that resulted in the greatest modification of total monthly runoff.

Key words: hydrologic models, Soil and Water Assessment Tool, land use changes