

EGU21-15324

<https://doi.org/10.5194/egusphere-egu21-15324>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Analysis of a short-duration severe precipitation event in a small ungauged basin through a semi-distributed hydrological model

Sofia Sarchani and Ioannis Tsanis

School of Environmental Engineering, Technical University of Crete, Akrotiri, Chania Crete, 73100, Greece

A cyclone passed over Western Crete in October 17, 2006 and caused a heavy precipitation event producing a flash flood in a small agricultural basin. The only rain gauge in the studied basin recorded daily rainfall of 196.2 mm with a time-step of 15 minutes while 117 mm was recorded in 4 hours. Simulation of the flow hydrograph was performed with the semi-distributed hydrological model HBV-light and the calibration with the post-flood field data from witnesses that indicated the time to peak flow and the maximum water depth of the passing flood wave. The warming-up period of the model was sixteen days and the previous observed rainfall was 21 mm which was recorded on October 12th. Potential evaporation was estimated through the Blaney-Criddle method. The basin was divided into various elevation zones representing three vegetation classes. The parameters regarding the soil moisture routine were applied per vegetation class. Sensitivity analysis, performed by changing one parameter at a time shows that the parameters concerning the response and routing routine affected mostly the peak hydrograph. Initial results for the peak hydrograph were compared with the one validated with HEC-HMS model and produced a very good Nash-Sutcliffe coefficient. There is on-going research of the effect of HBV-light parameters and further results will appear on the poster.