Environmental Engineering and Management Journal

August 2025, Vol. 24, No. 8, 1793-1804
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu
http://doi.org/10.30638/eemj.2025.139

"Gheorghe Asachi" Technical University of Iasi, Romania

HYDROLOGICAL MODELING OF THE TAZLĂU RIVER BASIN USING MODERN TECHNOLOGIES

Relu Adam[1], Alina Tirnovan[1], Codruta Badaluta - Minda[2*], Mihai - Valentin Herbei[3], Constantin Florescu[2]

[1]Siret Water Basin Administration, Bacău, Romania
[2] Politehnica University of Timisoara, Hydrotechnical Department, Spiru Haret Street, No. 1A, Romania
[3]Department of Sustainable Development and Environmental Engineering, University of Life Sciences "King Mihai I" From Timisoara, Romania

Abstract

The manifestation of hydrological events, sometimes catastrophic, recorded over the years in the Tazlău hydrographic basin with particular damages from an economic point of view and loss of human life imposes the need to know as deeply as possible its characteristics and especially its reaction to different amounts of precipitation for a management with a preventive role. This study has as its main objective the simulation of different scenarios of hydrological events based on which to develop large water management strategies. For the Tazlău hydrographic basin, the model calibration was carried out on the event recorded in the period 11-14 July 2005 (Qmax of 1556 mc/s on 13.07.2005 at 00:00 at the Helegiu hydrometric station), and the validation was done on the event recorded in the period 02.06-05.06 2016 (Qmax of 1418 mc/s on 03.06.2016 at 00:00 at the Helegiu hydrometric station). As inputs, in addition to the data series recorded on rainfall and flow, a numerical land model with a resolution of 5 m and the Corine Land Cover and Soil database from 2018 were used, and the Loss-SCS-CN method was chosen as the method.

Key words: floods, HEC-HMS and GIS, SCS-Curve Number, Tazlău river basin

Received: August, 2024; Revised final: November, 2024; Accepted: November, 2024; Published in final edited form: August, 2025

[*] Author to whom all correspondence should be addressed: e-mail: badaluta_minda@yahoo.com; Phone: +40721021390