



Characteristics of Winters Conditions and Floods in Small, Lowland River Catchment

Agnieszka Hejduk (1) and Leszek Hejduk (2)

(1) Warsaw University of Life Sciences -SGGW, Laboratory Water Center, Warsaw, Poland (agnieszka_hejduk@sggw.pl), (2) Warsaw University of Life Sciences -SGGW, Department of Hydraulic Engineering, Warsaw, Poland (leszek_hejduk@sggw.pl)

Characteristics of thermal and snowy conditions of winters and winter floods recorded at Czarna gauging station on Zagożdżonka River (central Poland) are given in the paper. The catchment area till Czarna station is 24.3 km², but to direct runoff and sediment delivery to river system contributes 19.6 km². The mean annual precipitation and runoff are estimated at 606 mm and 107 mm respectively. The snow cover usually appears between 25–30 of November and disappears between 20–25 of March. Land use in the catchment upstream of Czarna is dominated by arable land (70 percent). 20 percent of area is covered by forest, 9.4 percent is pastures and 0.6 percent is paved areas. Based on maximum, minimum, mean diurnal air temperatures and daily snow cover depth, thermal and snow conditions of winters have been characterized by using empirical indexes proposed by Paczos (Paczos, 1982, 1985). Rather cold and extraordinarily low snowy winters has dominated in Zagożdżonka catchment. There is a significant statistical relationship between winter snowiness index (WSn) and winter severity index (WOz) with $R=0.83$, $\alpha = 0.05$. Water discharge, rainfall and air temperature have been used to identify snowmelt periods and catchment response on water supply. Winter floods as a result of snowmelt have been observed almost each year. The total supply of analyzed cases varied from 69.3 to 10 mm, the peak discharge varied from 0.114 to 3.44 m³/s. Catchment response under different thermal and snowy conditions of winters varied from droughts to floods. There is statistical significant relation between maximum water discharge and snowiness conditions expressed by WSn index ($R=0.66$, $\alpha=0.05$).

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References: PACZOS S., 1982. Stosunki termiczne i śnieżne zim w Polsce. Unpublished dissertation, UMCS, Lublin

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