

ABSTRACT

Late Vistulian and Holocene evolution of the Czarna Konecka river valley between Stąporków and Sielpia Wielka

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The study area is located in the Czarna Konecka river valley between Stąporków and Sielpia Wielka (Końskie district, Świętokrzyskie voivodship). This watercourse is a small (length approx. 90 km, catchment area approx. 1,000 km²) upland river of third order in the Vistula basin. It drains the north-western Mesozoic margin of the Holy Cross Mts. (non-karst and tectonically inactive area) in the Kielce and Przedbórz Uplands. The Czarna Konecka river flows in the area of the Old-Polish Industrial District (OPID), where iron metallurgy based on hydropower was developing since the Late Middle Ages.

Based on the results of interdisciplinary research, the main stages of the valley evolution and the influence of various factors on its development in the Late Vistulian and Holocene have been identified.

Changes of the Czarna Konecka river pattern generally are consistent with the Falkowski's model (1970, 1975: braided channels → large meanders → small meanders → braided channels) modified by Kalicki (1991, 2006: Younger Dryas riverbed straightening and development of braided channels after the large meanders phase). The inconsistency with this model occurred in the last centuries, because instead of the braided river, in the valley functioned a multi-channel system (anthropogenic anastomoses) with numerous ponds (anthropogenic small-scale water retention system – ASWRS).

The largest influence on the fluvial environment in the analyzed period had climatic fluctuations, local conditions and human activity. The role of these factors in the evolution of the valley was changing. In the Late Vistulian its development was a consequence of climatic fluctuations and vegetation changes, referring to the stadial-interstadial cycle (**STAGE 1: variable river activity**), while in the Holocene, before the Subatlantic period, local conditions (large afforestation, natural small-scale water retention system – NSWRS) had a decisive influence on the valley evolution (**STAGE 2: river flows stabilization**). Subatlantic changes in fluvial environment was caused by increasing anthropopressure (deforestation, extermination of beavers and destruction of the NSWRS, construction and degradation of the hydrotechnical infrastructure of the ASWRS, afforestation) and led to the largest transformation of the valley floor in the Holocene (**STAGE 3: variable river activity**).

Recorded stages of the development of the study area reflect a huge impact of the functioning and destabilization of the NSWRS and ASWRS on the evolution of the valley of the third order river. Documentation of this impact is one of the few and the most detailed known from the Poland area.

