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RELIEF AND STRUCTURE OF CZARNA STASZOWSKA RIVER VALLEY DOWNSTREAM OF STASZÓW (POLISH UPLANDS)

P. Twaróg, T. Kalicki, M. Frączek, A. Zieliński
Jan Kochanowski University in Kielce, Institute of Geography, Department of Geomorphology, Geoarchaeology and Environmental Management,
ul. Świętokrzyska 15, 25–406 Kielce, Polska;
pawel.twarog@interia.pl; tomaszkalicki@ymail.com; marcinfraczek1987@gmail.com; artur.zielinski@ujk.edu.pl

Czarna Staszowska, the biggest river of Połaniec Basin (part of the Nida Basin), is the left tributary of Vistula river. Spring of the river is located in the Białe Ługi peat bog in Kielce Upland.

The river valley downstream of Staszów is about 4 km wide. On the Miocene clays occur here thick and genetically and lithologically diverse the Quaternary sediments. Fluvioglacial terrace of the Oder glaciations and fluvial terraces of the Vistulian are preserved in the relief. Sandy-gravelly alluvia of these last terraces are cross bedding and have been accumulated by braided river (Rzym, Pod Napięciem and MiM profiles).

The flat valley bottom is separated from older forms by distinct and steep erosional edge. Erosional remnants of higher, older forms occurred within valley floor (Rytwiany, Kłoda). Some alluvial bodies of different structure and age could be distinguished in the cross section of flood plain between Tuklęcz and Kłoda.

Świńska Krzywda site is located near the valley slope about 1,1 km from the present-day Czarna river bed. Macromeander is probably preserved here in the flood plain relief. Preliminary results of borings across this area confirm this interpretation. Large palaeomeander was filled by clastic and organic sediments. On sandy-gravely channel deposits (depth 2,5–2,2 m) occurs silty-sandy member (2,2–1,63 m), probably Late Glacial age (pollen analyses made by L. Petr in progress). This clastic member was covered with peats (contents of organic matter 60–90 %) with layer of peaty silts (organic content 40%) at depth 1,2-1,1 m. Change of sedimentation type from clastic to organic one was dated at 8210 ± 80 BP (MKL-3028) cal.7460–7059 BC (depth 1,30–1,35 m). The uppermost part of profile (depth 0,3–0,0 m) consist peaty silts (organic matter about 40 %). There were accumulated after 690 ± 60 BP (MKL-3027) cal. 1224–1400 AD (depth 0,40–0,45 m).

Kłoda site is located in the river bank near present-day landslide developed on the Miocene clays on the edge of Kłoda erosional remnant. Alluvia were accumulated during last millennium because there were TL dated at 1,3 ± 0,2 ka BP (KIE-866)(depth 1,5 m) and 1,2 ± 0,2 ka BP (KIE-865)(depth 0,53 m) and OSL dated at 1,6 ± 0,2 ka)(depth 1,5 m) and 1,3 ± 0,2 ka)(depth 1,0 m). Silty alluvia (40–10 % silt) have coarsening upward sequence.

Due to study results last incision of Czarna Staszowska downstream of Staszów could be dated on the end of Younger Pleniglacial because flood plain developed since

Late Glacial (macromeander at Świńska Krzywda site). Braided alluvia of the Vistulian terrace (Rzym, Pod Napięciem, MiM profiles) were dissected and concentration of river channel (large meanders) took place. Large meanders were cut off probably in the Younger Dryas/Holocene transition. There were filled first phase by clastic sediments in and in the second one (Holocene) by organic one. The cold event 8,2 ka BP is reflected in the peats as a decreasing of organic matter (layer of peaty silts) probably caused by an increase of flood frequency. The similar change of sedimentation type occurred in the last millennium when were deposited channel sediments near present-day river bed (Kłoda profile) and peaty silts (Świńska Krzywda profile) far from the river near the valley slope. This last change could be connected with anthropogenic impact (soil erosion and an increase of overbank sediments volume) and natural clustering of floods during the Little Ice Age.

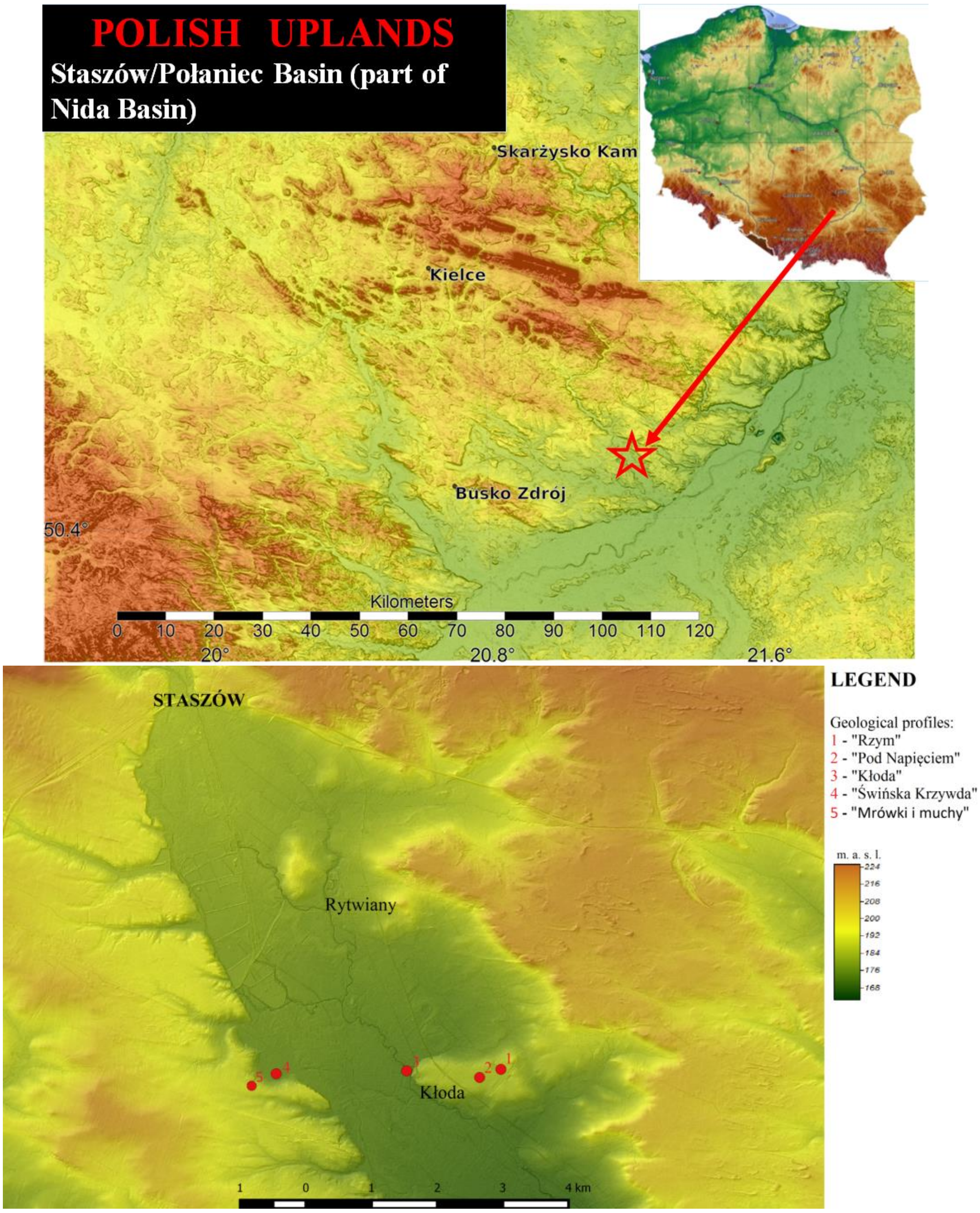

Figure 1 – Location of study area and sites

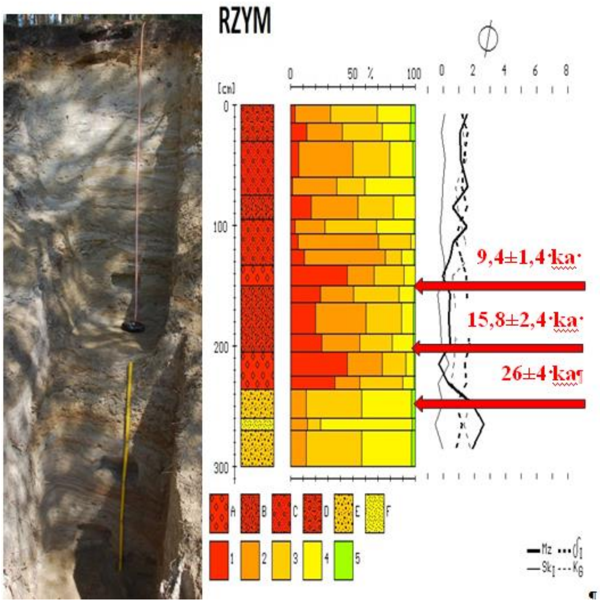

Figure 2 – Geological profile Rzym

Lithology: A – gravels with sands, B - sands with gravels, C – sands with single gravels, D – silty sands with gravels, E - varigrained sands, F – finey sands

Fractions: 1 – gravel (below -1 φ); 2 – coarse sand (-1–1 φ), 3 – medium sand (1–2 φ), 4 – fine sand (2–4 φ), 5 – silt and clay (above 4 φ); Folk-Ward's distribution parameters: Mz – mean size, δ_I – standard deviation, Sk_I – skewness, K_G – kurtosis

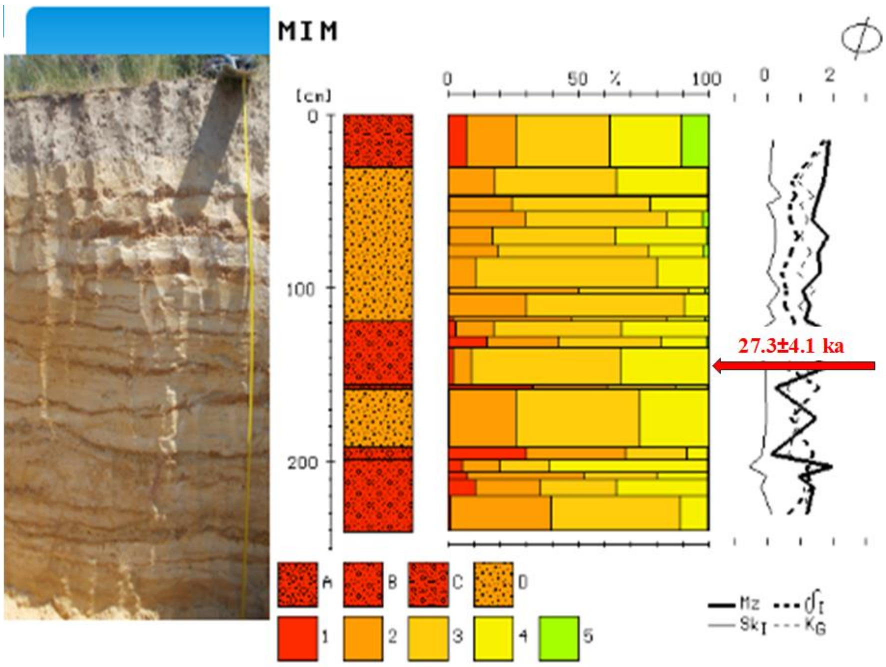

Figure 3 – Geological profile Mrówki i Muchy (MIM)

Lithology: A – sands with gravels, B – medium sands with single gravels, C – silty sands with gravels, D – varigrained sands;

Fractions: 1 – gravel (below -1 φ); 2 – coarse sand (-1–1 φ), 3 – medium sand (1–2 φ), 4 – fine sand (2–4 φ), 5 – silt and clay (above 4 φ); Folk-Ward's distribution parameters: Mz – mean size, δ_I – standard deviation, Sk_I – skewness, K_G – kurtosis

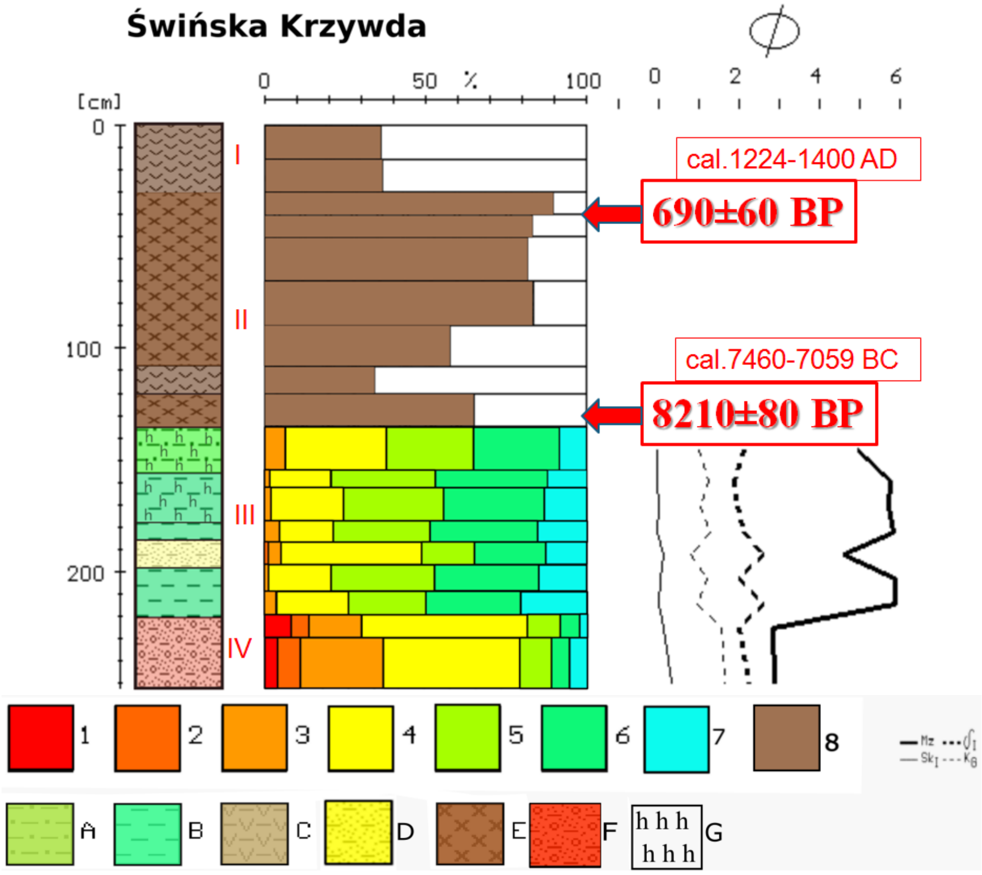

Fig. 4 – Large palaeomeander at Świńska Krzywda, geological profile of abandoned channel fill
Lithology: A – sandy silts, B – clayey silts, , C – peaty silts, D – silty sands, E - peats, F – sands with single gravels, G – detritus;
Fractions: 1 – gravel (below -1 φ); 2 – coarse sand (-1–1 φ), 3 – medium sand (1–2 φ), 4 – fine sand (2–4 φ), 5 – coarse and medium silt (4–6 φ), 6 – fine silt (6–8 φ), 7 – clay (above 8 φ), 8 – organic matter content; Folk-Ward's distribution parameters: Mz – mean size, δ_I – standard deviation, Sk_I – skewness, K_G – kurtosis

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GEOARCHAEOLOGICAL CONTEXT OF «VALLEY FORT» AT JATWIEŹ DUŻA (NE POLAND)

P. Przepióra[1], K. Żurek[2], T. Kalicki[1], M. Frączek[1], A. Wawrusiewicz[3]
[1]Jan Kochanowski University in Kielce, Institute of Geography, Department of Geomorphology, Geoarchaeology and Environmental Management,
ul. Świętokrzyska 15, 25–406 Kielce, Polska; pawelprzepiora1988@gmail.com
[2] Student Science Club of Geomorphologists «Złoty Bażant»,
Jan Kochanowski University in Kielce, ul. Świętokrzyska 15, 25–406 Kielce, Polska
[3]Department of Archaeology, Podlaskie Museum in Białystok,
Rynek Kościuszki 10, 15-426 Białystok, Poland

In the territory of north-eastern Poland (Podlasie) more are discovered traces of prehistoric settlements. In 2017, using the LiDAR method, located about 26 settlement sites in the Podlasie Lowland (Fig. 1). All these sites have a similar construction form and together