

GEOLOGICAL-GEOMORPHOLOGICAL MAPPING OF THE CZARNA KONECKA RIVER VALLEY DOWNSTREAM OF STĄPORKÓW (POLISH UPLANDS)

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Study section of the Czarna Konecka river valley is located downstream of Stąporków on Polish Uplands (fig. 1). There is the Mesozoic margin of Holy Cross Mountains with Jurassic (Lias) sandstone (Żarnów series) in the basement.

During Middle Polish glaciations period (Gowarczów phase) the study area was in the immediate front of the ice sheet and a dammed lake was created there. Traces of this as limnoglacial deposits occur in sockless of erosion-accumulative terraces (profiles Czarna 5 and 2), (fig. 1), but only in the eastern part of the study section. In the western part near a moraine hill (kame?) Ostre Górkę terraces are accumulative and are composed of thick series of sandy channel alluvia.

Within the valley a high terrace (approx. 6 m) can be distinguished which composed of sandy channel sediments of braided river (profile Czarna 5), (fig. 2). Middle terrace (4.0-4.5 m above the river level) is erosion-accumulative one in the east (profile Czarna 2) and accumulative one in the west (profile Czarna 3) of the study area. It has also been formed by braided river (fig. 2). F Lower terrace (approx. 3 m) was already shaped by the meandering river. Along the river relatively narrow strips floodplain extends higher (2.0-2.5 m) and lower (0.5-1.0 m) (fig. 2).

Alluvia of these two levels show a clear facial differentiation typical for meandering river sediments. Lateral channel migration has created a meandering hill (profile Czarna 3) and a few Holocene cut-fill alluvial bodies. There are numerous subfossil of tree trunks in both the channel sediments (profile Czarna 3) and an abandoned channel fill (profile Czarna 4 and 1). One of these subfossil trees was ^{14}C dated at 1700 ± 40 BP (MKL 2862) cal. 240-420 AD. It was fallen in the Late Roman period and it has accumulated on the limit between channel deposits and sandy bars in the first stage of abandoned channel filling. The fillings oxbow lakes (profiles Czarna 4 and 1) indicate distinct variation of sedimentation types, referring to changes in the frequency of flooding in the Holocene (fig. 3). One of this type change was ^{14}C dated at 630 ± 60 BP (MKL 2861) cal. 1270-1420 AD when peats were covered with levee deposits (intercalations of sands and silts). It could be connected with a medieval increase of anthropogenic changes of drainage basin and the valley floor but also with clustering of catastrophic events during the Little Ice Age.

Data collected during the Archaeological Mapping of Poland (Polish Archaeological Record) from the study section are few with only 4 points (traces of settlements) from the Stone Age. Two of them are located on the high terrace. The next two are already on the low terrace, which confirms indirectly probably its Lateglacial age. On this terrace (site 7) developed Early Medieval and Medieval settlement, which indicates that the area was overflowed in this period. However anthropogenic changes could trigger changes of sedimentation type on the flood plain. Archaeological data indicate that the settlement entered the valley floor (flood plain) only in modern times.

During last centuries, the valley has been transformed anthropogenically as documented by cartographic and historical data. This led to the occurrence of catastrophic event in 20th century, e. g. a flood after a break of the dam followed by an accumulation of very coarse alluvium with artefacts downstream of drained lake. At present days, the morphology of the river bed and the valley strongly influences the activity of beavers.

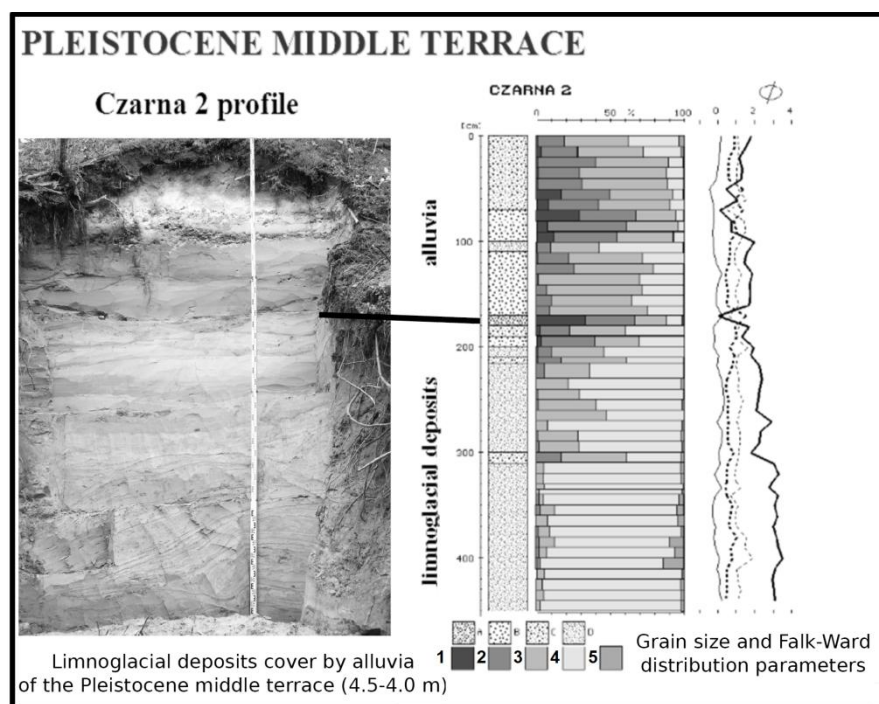


Fig. 1. Alluvia of middle terrace on erosional sockle. Lithology: A – sands with gravels, B – coarse sands, C – medium sands, D – fine sands. Grain size fractions: 1 – medium and fine gravel (-4 to -1ϕ), 2 – coarse sand (-1 to 1ϕ), 3 – medium sand (1 to 2ϕ), 4 – fine sand (2 to 4ϕ), 5 – silt and clay (above 4ϕ)

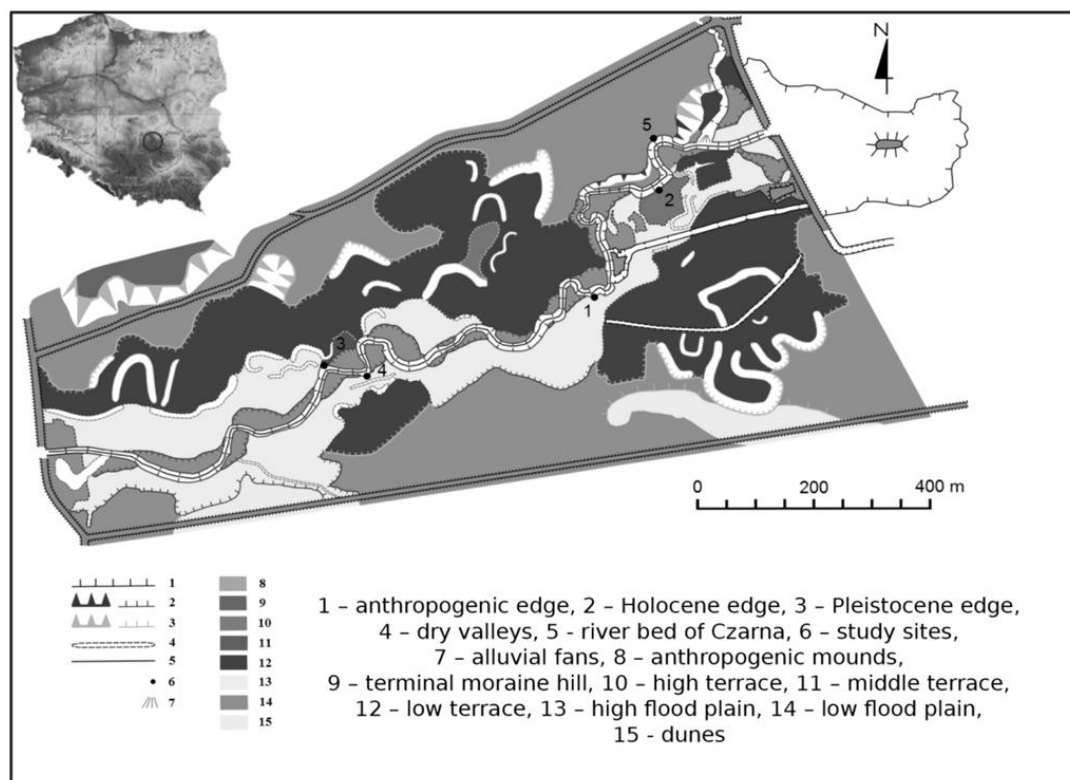


Fig. 2. Location and geomorphological map of study area (by P. Kusztal)

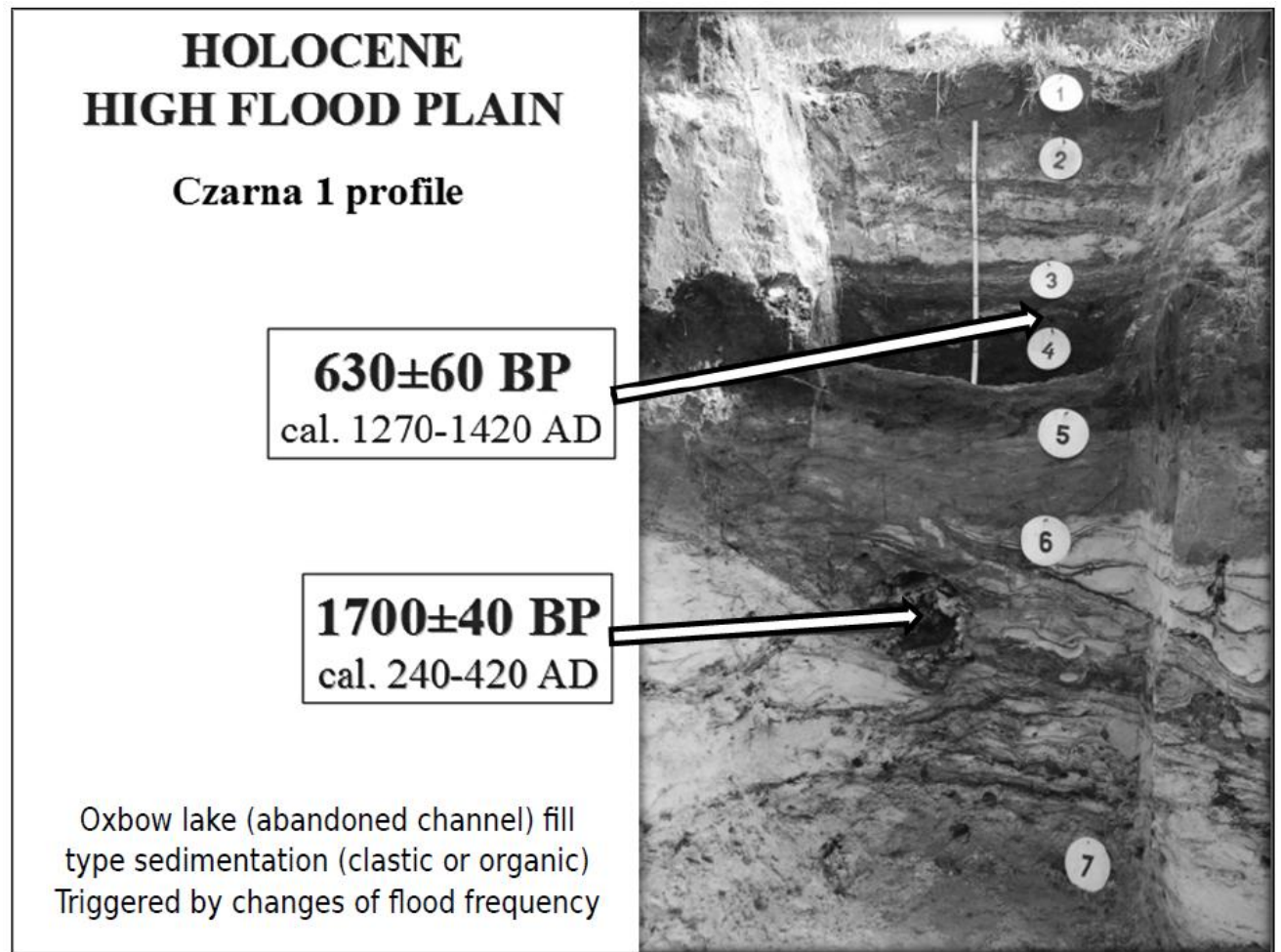


Fig. 3. Changes of sedimentation type in the abandoned channel fill