



Fluvial development of the Nete valley during the Late Weichselian and early Holocene: new data from a cross-section south of Kasterlee (NE-Belgium)

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The Late Quaternary geomorphology and stratigraphy of the fluvial deposits in the Kleine Nete valley is poorly documented, apart from the classic paper by Munaut and Paulissen (1973) on the palaeo-ecology of this river valley. A good description of the fluvial development within this catchment over longer timescales would help to understand palaeohydrological conditions, as it may give insight into changes in river bed elevation and palaeo-channel morphology. As such, existing hydrological models can be tested for conditions that are different than today, by unlocking the palaeohydrological archive.

During road construction works, a cross-section through the Kleine Nete alluvium could be observed, directly (tens of meters) south of the present river course and underneath an abandoned channel that is traceable on historical maps and still visible in the landscape today. The river's alluvium is very thin – the sediment thickness usually does not exceed 2-3 m – while the composition is monotonous, either sand or peat with at a thin loamy layer at the top. Different fluvial facies, including horizontally laminated and cross-bedded sands, channel-fill sands, in-situ (?) peat layers, reworked peat mixed with sand, and loamy alluvium were encountered and sampled for grain-size analysis, palynological analysis and optically stimulated luminescence (OSL) dating.

The preliminary results show that vertical aggradation took place during the late Pleniglacial (between ca. 20-16 ka) over a large area (probably by a braided river). This aggradation phase was followed by incision and the development of confined channels that subsequently were filled with basal peat and channel sands during the Late Glacial (ca. 15-12 ka) and the early Holocene (ca. 11 ka). The different dimensions of the observed channels (cross-section and river bed elevation), in comparison with those of the present-day river, suggest that large parts of the alluvial plain were experiencing different hydrological conditions during the Late Glacial and early Holocene than today.

We conclude that despite the non-continuous nature of the sedimentary archive in the investigated profile, relevant information with respect to the palaeohydrological evolution of the Nete catchment could be obtained.

Reference

Munaut, A.V., Paulissen, E., 1973. Evolution et paléo-écologie de la vallée de la Petite Nèthe au cours du post-Würm (Belgique). *Extrait des Annales de la Société Géologique de Belgique* 96, 301-346.