

Chronology of the establishment of Sarthe's alluvial system

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In terms of geomorphology, Quaternary period is characterized in Northern France by the entrenchment of the main alluvial systems. The glacial/interglacial Quaternary climatic cycles of this period induce a variability in the competence of the rivers, and then a balance between erosion and deposition phases. In active uplift tectonic context, it usually results in the establishment of stepped terraces systems. Indeed, each climatic cycle seems allowing the establishment of a terrace deposit that can be protected from the erosion during the next glacial cycle through tectonic reasons (uplift, change of the course…). In parallel to geological and climatic events, Quaternary is also marked by the appearance of the genus Homo. During the Middle Pleistocene, prehistoric men are already present in Western Europe and in the Northern part of France. In sedimentary basin context, evidences of past human occupations have been recognized mainly at the bottom or at the top the fluvial terraces deposits.

The Sarthe river is located in the western France and flows on the edge of both geological formations of the sedimentary Paris basin and the Armorican Massif. This precursory work intended to establish the first chronological framework of the alluvial system of the Middle Sarthe's drainage basin and, by extension, to constraint the ages of the prehistoric human artifacts found on the surface of the terraces. In that aim, the Electron Spin Resonance (ESR) dating method was applied to optically bleached quartz extracted from Quaternary alluvial deposits. Results indicate that the Sarthe hydrographic network is aged of about 1.2 Ma, and that the incision of the valley by the river continued throughout the whole Middle and Late Pleistocene. Most of the fluvial terraces were deposited during the Middle Pleistocene.

Lower Palaeolithic archaeological artifacts of were found on terraces dated between 650 ka and 400 ka, while Middle Palaeolithic ones were recovered at the surface of formations dated between 320 and 200 ka, and Upper Palaeolithic ones on the most recent terrace.