



Paleoenvironmental reconstruction of abandoned meanders in the Assomption River, Québec (Canada)

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Abandoned meanders are common features of the landscape in the majority of alluvial plains and deltas throughout the world. They are created when the meander is cut off from the bend of a stream. There are two types of cut-off: the chute and the meander neck cut-off. Each of these generates a distinctive abandoned meander shape (e.g. closed and simple, simple/compound and normal) and occur under different conditions. Once abandoned, the meander fills with stagnant water, which allows for the establishment of aquatic and subaquatic plants and later wetland and peatland plants. Other factors such as climate and human activity in the catchment area may also influence the filling of abandoned meanders.

There are many abandoned meanders in the alluvial plain of the Assomption River, located downstream of the city of Joliette in the Lanaudière region of Quebec (Canada). There are several different shapes of meanders and different stages of filling-in, which provides evidence of dynamic changes in the region over time. To date in Québec, there are very few studies that include a paleoenvironmental reconstruction of filled meanders. However, several researchers have examined other wetland features such as peatlands and lakes. In wetlands in the region, as well as in abandoned meanders, the production of organic matter is higher than its rate of decay. The data record in wetlands can thus be preserved over a long period of time and it is possible to reconstruct the different stages of their evolution. The data provided by the sediments from the abandoned meander will give us a better understanding of the Assomption River's evolution and will provide insight into how the river responded to climate change and human activities in its watershed.

Our study of abandoned meanders is guided by the following questions: what are the factors and processes that caused the meanders to be cut off from the Assomption River? What is the timeframe for the infilling of meanders? To answer these questions, several peat cores were sampled using a Russian corer from the deepest point of an abandoned meander. Each core was cut into 1 cm-wide slices. Organic sediments were examined for plant macrofossil data. ^{14}C dates will be used to provide a chronological framework for the paleoenvironmental reconstruction.

The dynamics of the Assomption River and the recent cut-offs will be determined by combining a multi-year analysis of aerial photographs with ^{14}C dates of macrofossils sampled at the peat-mineral transition at the base of the sampled cores. Preliminary results indicate a silty content enriched in organic matter towards the surface. The macrofossil data reveal an initial aquatic flora (eg, *Potamogeton natans*) that has evolved to riparian flora (eg, *Cyperus rivularis*) and peat flora (eg, *Carex exilis*). The cut-off phase of the abandoned meander occurred at around 2200 BP.