Figure DR1: Detail on the connection between the Rivière Saint-Étienne and the upper valley (contour interval: 10 m; on-land aerial photography provided by IGN, France). A: zoom area. The slope at the river mouth is about 0.8° and quickly increases to 8.5° in the canyon area. The canyon head starts at 20 m of water depth, which is only 200 m from the shore. Note the similitude between the lateral extent of the canyon and the edges of the river mouth.
**Figure DR2:** Detail on the braided plain area from Figure 1 enhanced with a color representation.

**Figure DR3:** Examples of typical sediment facies observed in our cores (see Figure 1 for cores location). Note the grain size of the sedimentary sequences.