

## **Influence of hydrology on manganese and iron deposition and recycling in an intertidal mudflat of Loire estuary**

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Brillantes is the largest mudflat of the Loire estuary. Sedimentary regime and primary production are mainly driven by the hydrology of the Loire River. Nutrients runoff and sedimentation/re-suspension processes are variable at different spatial and temporal scales. In this study we choose to investigate processes associated to organic carbon mineralization at contrasted hydrological situations (late summer low flow, winter flow and spring descending flow) between September 2012 and February 2014, for two sites along a cross-shore transect. Analysing both pore water (DET-probe sampling, microprofiling) and solid chemistry at a millimetre scale resolution over the first ten centimeters, we documented the impact of a rapid deposition of sediment on iron recycling and its slow evolution towards solid/dissolved equilibrium. Sediment at Brillantes is an iron-oxydes-rich fine silt containing a relatively high amount of organic carbon (3% dry weight on the top core during the peak flood of winter). Therefore, organic carbon mineralization processes are intense and dissimilatory iron reduction plays a major role. The impact of flood on deposition was stronger close to the shore. The more distal station was probably more subjected to repetitive re-suspension due to tides that smoothed a more seasonal signal on deposition and recycling of metals.