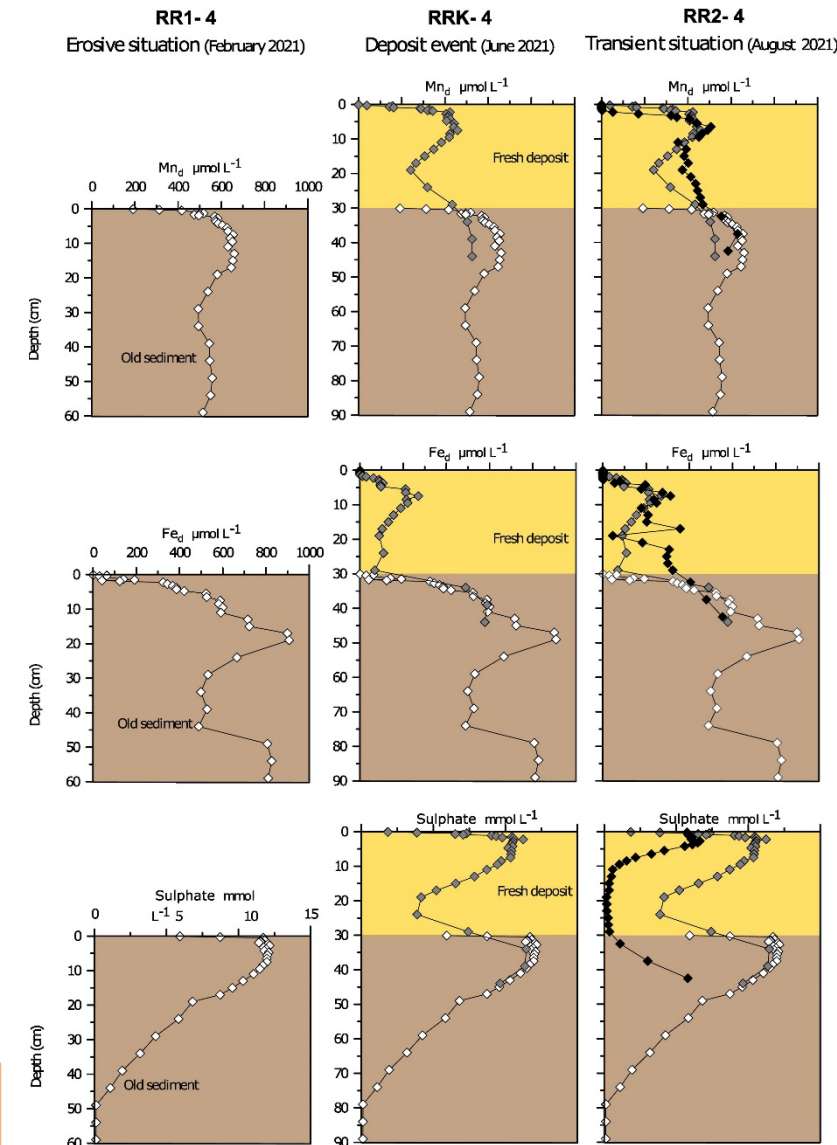
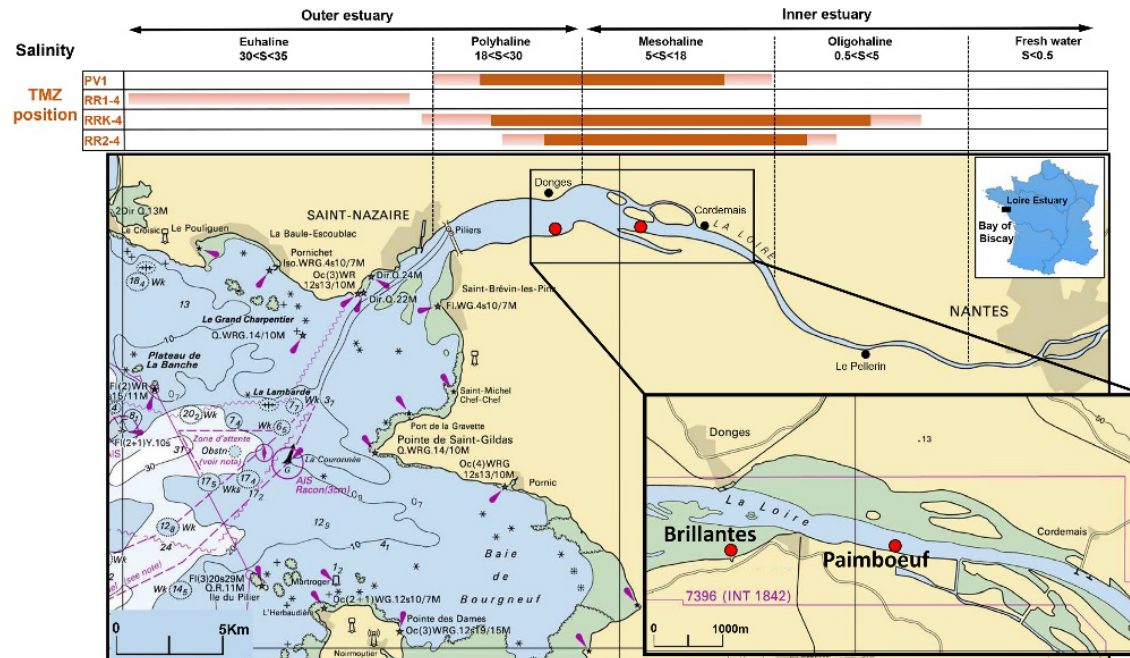


# Biogeochemical cycling of manganese and iron in a macrotidal and hyperturbid estuary subject to flow-driven sedimentation

Mohammed Barhdadi, Aurélia Mouret, Christine Barras, Sabine Schmidt, Grégoire Maillet, Nour El Imene Boukourt, Meryem Mojtahid, Matthieu Durand, Bruno Deflandre, Corentin Guilhermic, Aubin Thibault de Chanvalon, Sylvain Rigaud, Éric Bénéteau, Édouard Metzger, *Chemical Geology*, 2024, 661, pp.122182. DOI : [10.1016/j.chemgeo.2024.122182](https://doi.org/10.1016/j.chemgeo.2024.122182)



**Fig. 7.** Pore-water profiles of dissolved Mn ( $Mn_d$ ), dissolved Fe ( $Fe_d$ ), and sulphate concentrations with depth, temporally contextualized after a hydrosedimentary interpretation based on radioelements at the muddy riverbed (Paimboeuf) in winter, spring, and summer 2021. White squares show February data, dark grey squares show June data, and black squares show August data.

- The Brillantes mudflat (PV1): pyrite formation (first 50 centimeters) → longer sediment residence time → less disturbed → Differences in burial and transformation pathways: the mudflat shows a unique pattern of metal burial in the form of carbonates and probably phosphates
- Paimboeuf (RR1/RRK/RR2): no pyrite formation → Transient diagenesis (disturbed geochemical processes) → Shorter sediment residence time → Site subject to disturbance (flooding, TMZ displacement, sediment transport, etc.)
- Pore water, radioelement and sequential extraction data suggest that a fresh deposit was deposited between February and June 2021