Oxygen dynamics in mangrove sediments, Vavouto Bay, New Caledonia

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Nickel mining activities increase the rate of metals export from watersheds to mangroves. Mangroves are natural accumulation zones where metals are partially immobilized onto or into iron minerals (*i.e.*, oxides and sulfides) and organic matter. From recent results, it has been hypothesized that lateral evolution (from salt flat to Rhizophora sea front) of Ni speciation may be related to reoxidation of Ni-bearing pyrites. The latter are subjected to periodic reducing and oxidizing events due to daily tidal fluctuations.

In order to test the impact of tidal fluctuations on the oxygen supply, small size optical probes were deployed vertically from 5 to 50 cm depth, at different vegetation and topographic levels in the Vavouto Bay mangrove. Continuous measurements of oxygen were performed during tidal cycles. E*x situ* oxygen consumption rates were also measured.

First interpretations, show that only sediment along river banks undergoes efficient tidal aeration. Finally, the main source of oxygen in the 5-50 cm layer might simply stay roots diffusion and crabs bioturbation.