

Early diagenesis in New Caledonia lagoon

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Study site is located on the North-West part of the lagoon from New Caledonia (Grande Terre). Sediment cores were sampled in the Vavouto, Katavili and Chasseloup bays in July 2016 during the dry season and in December 2018 during the wet season. The Vavouto bay is located downstream the ultramafic Koniambo outcrop composed of deeply weathered peridotites and thus characterized by Ferralsols enriched in Fe, Mn, Cr, Ni and Co. The Chasseloup bay is located downstream volcano-sedimentary setting mainly composed of Acrisols, Cambisols Vertisols and Fluvisols that are characterized by medium to high Si, Al, Mg and K concentrations. The Katavili bay is located at an intermediate position, downstream these two types of ultramafic and volcano-sedimentary settings. In both the Vavouto and Katavili bays, three sediment cores were collected close to the shore, at an intermediate position in the lagoon and close to the coral reef, whereas only one sediment core was collected at an intermediate position in the lagoon in the Chasseloup bay. Each sediment core was sampled for pore waters and solids every 1cm from 0 to 20-30cm depth under nitrogen flow in order to prevent any oxidation. From sediment mineralogy and chemical analyses we propose a general schema for organic matter mineralization and iron/sulfur redox processes along a transect inner bay-coral reef in New Caledonia lagoon..