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FLUVIO-LACUSTRINE FORMATION OF NEW CALEDONIA: POST-DEPOSIT PROCESSES AND DYNAMICS OF TRACE METALLIC ELEMENTS

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Located in the south-west Pacific, New Caledonia is an archipelago with a complex geodynamic history. Grande Terre, the main island, is covered by more than 25% of tropical regoliths developed on ultramafic rocks. These peridotites, naturally enriched in metallic elements (Fe, Mn, Al, Ni, Co, Cr), constitute most of the southern part of New Caledonia. Since approximately 27 Ma, these rocks have undergone weathering, under a humid and warm climate, and erosion. This combination has led to the formation of the fluvio-lacustrine system, by accumulation of sediments eroded from local summits in depressions and valleys. The sedimentary filling of this system is essentially of fluvial origin, with rare lacustrine occurrences. Its structure is complex and some sedimentary levels show abnormally high accumulations of Trace Metallic Elements (Ni, Co, Cr).

This poster will display the first results of a project aiming to understand the mobility of these metals in this system. These results are focus on outcrops hosting several networks of hardened iron oxides and Mn oxides partitions, intersecting clayey (figure below). The preliminary results, crossing X-Ray diffraction, X-Ray fluorescence and Scanning Electron Microscope with sedimentological analyses have revealed enrichments in Mn within the partitions. Such results point to the fact that fluid circulations that have affected the fluvio-lacustrine formation likely contributed to the remobilization of metallic elements prior to its structural organisation and caused the formation of several distinct generations of Fe and Mn oxides.

