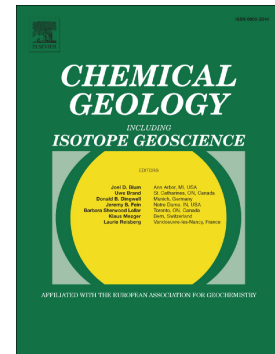


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Origin of Calcium in pedogenic carbonate nodules from silicate watersheds in the Far North Region of Cameroon: respective contribution of in situ weathering source and dust input

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Abstract

Significant amounts of pedogenic Ca-carbonate nodules have been observed in the Far North Region of Cameroon in the carbonate-free watershed of the Mayo Tsanaga, thus *a priori* not favourable for carbonate nodules accumulations. These nodules are associated with a Clay-Rich Parent Material (CRPM), covering either a granitic (upstream) or a greenstone bedrock (downstream). In this peculiar context, the amount of pedogenic carbonate nodules represents large quantities of Ca and C. Therefore, determining the Ca sources for pedogenic carbonate nodules is a key point regarding the mechanisms leading to carbonate nodule precipitation and their role in the biogeochemical cycle of Ca. Three sites, two on granite and one on greenstone, were studied by combining Sr et Nd isotope systematics in order to assess the Ca sources of carbonate nodules and the origin of the CRPM associated with nodules.

Carbonate nodules have a distinct Sr isotopic composition in each profile, pointing to the contribution of a local source for Ca. Sr isotopic compositions of plagioclases and carbonate nodules display a concomitant variation in each profile, indicating that plagioclases acted as a Sr, and thus Ca, source for the carbonate nodules. Nevertheless, carbonate nodules have a higher Sr isotopic signature than plagioclases, implying the contribution of another more radiogenic Sr source. Sr and Nd isotope data from the CRPM show that it is a mixture of

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