

Carbonate carbon isotope stratigraphy of the Paleoproterozoic Francevillian Group in Gabon

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The large fluctuations of $\delta^{13}\text{C}_{\text{carb}}$ in the Paleoproterozoic are important in terms of the speculation on the atmospheric oxygen level and the global stratigraphic correlations. The interval characterized by the generally high values of $\delta^{13}\text{C}_{\text{carb}}$ up to +10 ‰ is called Lomagundi-Jatuli Event (LJE; ca. 2.2-2.0 Ga) and interpreted as reflecting high rates of oxygen production (e.g. Karhu & Holland, 1996; Martin et al., 2011). The drop of $\delta^{13}\text{C}_{\text{carb}}$ and $\delta^{13}\text{C}_{\text{org}}$ at the end of LJE are reported from Shunga in Fennoscandia, and the negative shift of $\delta^{13}\text{C}_{\text{org}}$ is correlated with that of Franceville in Gabon (Kump et al., 2011); however, the $\delta^{13}\text{C}_{\text{carb}}$ data in Gabon is still missing because of the scarcity of the carbonate rocks. The Paleoproterozoic Francevillian Group in Gabon consists of FA (fluvial sandstones), FB (black shales/carbonates), FC (cherts), FD (black shales), and FE (sandstones) in ascending order. The lithostratigraphic correlation between the Franceville, Lastoursville, and Okondja basins suggests that the FA-FB-FC units are in different depositional settings and the FD-FE units are in common facies, which indicates the final opening of the intracratonic basins. In order to explore the global correlation of $\delta^{13}\text{C}_{\text{carb}}$, the analyses in the FD-FE units are required. In this study, we conducted two drillings in the Lastoursville and Okondja basins to obtain the fresh core-samples of FD. The lithological observations clarified that numbers of carbonate layers are intercalated in black shales in the FD unit in the both areas. We analyzed $\delta^{13}\text{C}_{\text{carb}}$ of these carbonate layers, and filled in the stratigraphic blanks in the FD unit. In this presentation, we will discuss the propriety of the $\delta^{13}\text{C}_{\text{carb}}$ stratigraphic correlations.

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