Discussion on a lectostratotype proposal for the Ediacaran Sete Lagoas Formation, Bambuí Group, Brazil

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Abstract

The Neoproterozoic deposits in the western portion of the São Francisco basin, which was contiguous with the Congo craton, are represented by the Jequitaí Formation and the Bambuí Group. The Sete Lagoas Formation represents the basal unit of the Bambuí Group and consists of a sequence of carbonate-dominated sediments in the São Francisco basin. Even though five formations have been formalized within the Bambuí Group, the type sections of these lithostratigraphic units were never formally described. The International Stratigraphic Guide establishes that a formal lithostratigraphic unit must have a type locality and a stratotype section with a clear characterization. As a stratotype was never described for the Sete Lagoas Formation, a proposal of a lectostratotype is highly recommended. Additionally, the designation of a lectostratotype section is a possibility to complement the definition of a lithostratigraphic unit. Due to the lack of a formal proposal for a stratotype section for the Sete Lagoas Formation, the Rei do Mato cave section is discussed as a potential candidate for a lectostratotype designation. This section is located inside the borders of the Gruta Rei do Mato Conservation Unit, Sete Lagoas County, Minas Gerais State, southeastern Brazil, Datum WGS84, 23K, 575103 mE, 7844059 mN (UTM). This section is 125 meters thick, and the upper boundary with the Serra de Santa Helena Formation outcrops. However, the basal boundary of the Sete Lagoas Formation with the underlying lithostratigraphic unit is not exposed in this area, and the rocks of the Sete Lagoas Formation rest on top of a Paleoproterozoic gneiss–migmatite basement. The section consists predominantly of limestones, with little or no contribution of siliciclastics. The main lithologies are pure calcarenites, light to dark gray, with variable grain size, and presenting a high diagenetic grade. In the basal and intermediate portion of the section, sedimentary structures such as hummocky and swaley cross-bedding, soft-sediment deformation comprising synforms, and convoluted bedding occur. This lithofacies association indicates deposition below the fair-weather wave base, in a transitional environment influenced by storms, and associated with a sloped carbonate ramp with a high accumulation rate. In the upper portion of the section, the lithofacies display a greater amount of low-angle, tabular cross-lamination, climbing ripples, herringbone cross-stratification, and the occurrence of bifurcated columnar stromatolites. Such morphotype of microbialites was classified as possibly belonging to the Genus *Gymnosolen* Steinmann, 1911. The

distribution of these stromatolites varies laterally, depending on the paleoecological conditions, possibly representing a stromatolitic internal carbonate ramp, influenced by waves or tides. The interval above the stromatolites presents a more significant contribution of siliciclastic material, consisting of marls overlain by massive laminated siltstones, representing the transition to the Serra de Santa Helena Formation. This boundary can represent a major marine transgression associated with paleoenvironmental changes, in which the platform becomes influenced by siliciclastic materials from the craton.

Keyword

Sete Lagoas Formation, Bambuí Group, Lectostratotype