Stratigraphic importance of the lowest Ediacaran tubestone-microbialite association in the Paraguay Fold Belt (Brazil)

GUILHERME R. ROMERO[1], EVELYN A. M. SANCHEZ[2], LUANA P. C. MORAIS[3], PAULO C. BOGGIANI[4] AND THOMAS R. FAIRCHILD[5]

Instituto de Geociências, Universidade de São Paulo, Brazil
[1](graffaeli@gmail.com)
[2](eamsanchez@gmail.com)
[3](luaninhabio@gmail.com)
[4](pcboggiani@usp.br)
[5](trfairch@hotmail.com)

The apparent restriction of tubestone structures in microbialitic laminites to cap carbonates associated with the Marinoan glacial event in North and South America, Namibia and Oman makes them an important stratigraphic tool for the base of the Ediacaran system. This association has been recognized in outcrops attributed to the Bocaina Formation at Morraria do Sul (MDS) and Forte de Coimbra (FDC), southwestern Brazil, within the Corumbá Group in the southern Paraguay Fold Belt, about 200 km south of the type-locality of this formation. The tubestone-microbialite association at MDS and FDC reveal very similar macro- to microstructure, mineralogy, texture and fabrics, which are likewise very similar to the tubestone-microbialite association in the Ediacaran cap carbonate of the Mirassol d'Oeste Formation-MDO (635 Ma) in the northern Paraguay Fold Belt 420 km to the north. All three occurrences are distinctly different, however, from mistakenly identified tubestone structures in the Bocaina Formation at Porto Morrinhos (PMS), near its type-section. Moreover, dating of zircon in an ash bed in the Bocaina Formation at PMS yielded an age much younger than the Marinoan event, clearly indicating that the traditional regional stratigraphy requires revision. These results extend the occurrence of the post-Marinoan tubestone-microbialite association at least 600 km southward from MDO, thereby increasing both the stratigraphic complexity and the paleobiological potential of the southern Paraguay Fold Belt, already well known for the important terminal Ediacaran *Cloudina-Corumbella* shelly fauna in the Tamengo Formation of the upper Corumbá Group.