



## **Calcified algae association from the Cerro Puntudo paleolake (Anisian, early Middle Triassic), San Juan, Argentina**

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Calcified algae are essential in paleoecological studies of carbonate sediments to unravel the environmental conditions that prevailed in a particular setting. A microbialitic limestone of the upper section of the Cerro Puntudo Formation was analyzed, emphasizing the role of calcified algae, in order to establish the paleoecological conditions that predominated during their growth. It corresponds to a carbonate lacustrine sequence of the Cerro Puntudo depocenter (Cuyana Basin). The mesostructure of the limestone consists of oncoids that vary in size between 0.5 and 8cm. The microstructure of the oncoids displays a concentric laminated cortex. Between the laminae there are algal filaments preserved as tubules between 10 and 20 $\mu$ m long with micritized walls and radial disposition. The algal tubules are straight or slightly curved and are found in small aggregates or as tangled masses. The characters of the filaments are considered diagnostic of the morphogroup of tubiform calcified algae (with recent cyanophytes affinity). The oncoid nucleus may present charophyte thalli and associated gyrogonites that are rarely articulated. Thalli are 0.2 to 0.6mm long in transversal section. Gyrogonites measure ca. 400 $\mu$ m (equatorial) and 600 $\mu$ m (polar axis) with conical apex and base. Charophytic fragments possibly belong to the Porocharaceae family. The microfacies is defined as an algal wackestone. The microbialite consists of microbial mats that grow over charophyte thalli and reproductive structures in the margin of the paleolake (littoral zone) revealing a possible paleoecological association relevant to the paleoenvironmental reconstruction of the Cerro Puntudo paleolake. The microbial mats cover charophyte thalli while the latter were still in situ. This is supported by the association of vegetative and reproductive structures, even rarely articulated, and without signs of transport. Until now, this is the first report of this kind of association for a lacustrine Triassic environment.

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