

Exploring the Triassic Panthalassa Ocean: Micropaleontology and Carbonate Sedimentology from Circum-Pacific outcrops

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During the Late Triassic all continents were merged into the single supercontinent Pangea, that was surrounded by the immense Panthalassa Ocean. The role of this vast oceanic domain in the global changes and major turnovers that occurred during the Triassic, remains poorly known. Shallow-water carbonate environments, known to thrive with life, are well-developed in the Upper Triassic of Panthalassa. Over the last fifteen years, these overlooked carbonate systems have been investigated for their sedimentological and micropaleontological significance. To better understand the paleoenvironmental conditions that prevailed during the Late Triassic in the Panthalassa, we investigated several localities today distributed all around the Pacific Ocean, in Japan, Russia, Canada, the United States, and Mexico. The same workflow combining field and lithofacies observations, microfacies analysis and biostratigraphy was applied to better constrain the correlations between these different localities, and with their Tethyan counterparts. Depositional models were proposed for each system, in relation to the geodynamic context (i. e., mid oceanic seamounts, island arcs, pericratonic ramps). Micropaleontological inventory including the description of numerous taxonomic groups (e.g., foraminifers, sponges, microproblematica, algae, conodonts...) was carried out. The obtained results significantly strengthen our knowledge of the biodiversity and stratigraphy of these tropical carbonate systems, improve our understanding of biotic evolution, dispersal potential, and paleoenvironmental conditions during the Late Triassic, and also provides significant constrains to test paleogeodynamic reconstructions of the Panthalassa Ocean.

Mots-Clés : Triassic, Panthalassa, Micropaleontology, Carbonate sedimentology, Paleogeography