



Microbially-induced sedimentary structures (MISS) in the Early Triassic Hothouse after the End-Permian Extinction

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Lower Triassic marine strata of the Sverdrup Basin (Arctic Canada) include a thick succession of heterolithic sandy and silty facies that record life in the aftermath of the end Permian mass extinction. Proxies for oxygenation (trace metals, pyrite framboids) suggest that dysoxic conditions prevailed in the Basin for much of the Early Triassic. This suppressed bioturbation and allowed the frequent development of microbially-induced sedimentary structures (MISS), including wrinkle structures, *Kinneyia* and bubble texture. The microbial mats responsible for these structures are envisaged to have thrived, in dysoxic settings, within the photic zone, on fine sand substrates. The dysoxic history was punctuated by better-oxygenated phases, which coincide with the loss of MISS. Thus, Permo-Triassic boundary and Griesbachian mudrocks from the deepest-water settings have common benthos and a well-developed, tiered burrow profile dominated by *Phycosiphon*. MISS are also lacking from *Skolithos*-burrowed, nearshore sandstones that developed during basin-wide oxygenation in the late Dienerian. Intervals of the intense burrowing in the earliest Triassic contradicts the notion that bioturbation was severely suppressed at this time due to extinction losses at the end of the Permian.