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Peculiar water geochemistry and faunal association in Upper Permian carbonate platform and Early Triassic microbial reef in Turkey

RICHOZ, S.[1], BAUD, A.[2], JENNY, C.[3] & MARCOUX, J.[†]

(1) Paleontological Institut, Vienna University, Althanstrasse 14, 1090 Vienna, Austria;
Sylvain.Richoz@univie.ac.at
(2) Parc de la Rouvraie 28, CH-1018 Lausanne, Switzerland
(3) Rte d'Epeisses, 1242 Avully, Switzerland

With the end-Permian mass extinction, a major crisis occurred in Phanerozoic carbonate systems. The prolific Upper Paleozoic skeletal carbonate factory was abruptly replaced by a non-skeletal carbonate factory (BAUD *et al*. 1998 and 2005). In Changhsinghian, foraminifers assemblage shows some stressed and peculiar form, before the first disturbance in the isotopic record, witness of a very early ecological stressed in the process leading to the Pemian-Triassic extinction event (JENNY & GUEX 2005).
In Early Triassic, primitive groups of microbial communities emerged from stressed paleoenvironments to recolonize normal marine areas (BAUD *et al*. 1998 and 2005) and notably the giant carbonate platforms of the western and central Tethys. We note massive and dendrolitic thrombolites, stromatolites and oncoids in different. Microanalyses have been operated on different microfacies of microbialite carbonates (peloidal, clotted or aphanatic micrite, organic and inorganic carbonate precipitation). Oncoids and pure stromatolitic reef don't show any differences with the normal marine signal. However thrombolites and stromatolites associated with thrombolites show strong isotopic differentiation between their different fabrics.
Precipitations biologically induced along cyanobacteria filaments show strongest positive fractionation (between 1 and 2.5‰), which can be explained by the specific metabolism of cyanobacteria fixing preferentially the ^{13}C and not the ^{12}C as for metazoan species (MERZ 1992).
Scientists using isotopic curve to stratigraphic correlation have to be aware of the peculiar geochemical processes occurring in the microbial mats and be careful using these types of facies.

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