

Upper Triassic (Rhaetian) conodont biostratigraphy of the Panthalassa Ocean and the final extinction of conodonts at the end-Triassic

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The Rhaetian stage of the Triassic was characterized by intense biological, climatic, and environmental changes, ending with the break-up of the supercontinent Pangaea and the end-Triassic mass extinction (ETE). Notably, the ETE appears to be associated with significant $\delta^{13}\text{C}$ perturbations, commonly linked to the CAMP (Central Atlantic Magmatic Province) eruptive phases. The stratigraphic record of these environmental changes has been documented in Upper Triassic bedded chert successions in Japan, deposited within a Paleo-Pacific (Panthalassa) deep basin. The chronology of the Rhaetian pelagic sediments in the Panthalassic Ocean is based on radiolarian zones, which are well established in the Upper Triassic bedded chert successions in the Mino Belt, central Japan. Although accurate calibration of the chronostratigraphic stages and substages is based mainly on ammonites and conodonts, most of the Japanese radiolarian zones have been calibrated through correlation with zonal schemes established in other regions, and do not have a calibrated conodont biostratigraphy.

Here we present the Upper Norian to Rhaetian conodont biostratigraphy of an Upper Triassic bedded chert succession from the Mino belt, central Japan, where the radiolarian biostratigraphy has been investigated. Based on the stratigraphic distributions of marker species, four conodont zones are defined: the *Mockina bidentata*, *Misikella hernsteini*, *M. posthernsteini*, and *M. ultimazones* (in stratigraphic order). The conodont biostratigraphy established here calibrates the radiolarian zones in Japan with standard chronostratigraphic stages and substages, which allow us to compare the bio- and chemostratigraphic data of other Triassic-Jurassic boundary sections from different areas in Tethys and Panthalassa oceans. Our analysis suggests that the final extinction of conodonts was asynchronous: the group first tried to take refuge from shallow water to open marine environments before becoming extinct.

Keywords: Triassic, Jurassic, Chert, Panthalassa Ocean, Conodont, Extinction