

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

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The Rhaetian stage of the Triassic was a period characterized by intense biological, climate and environmental changes, ending with the break-up of the supercontinent Pangaea and the occurrence of the End-Triassic mass Extinction (ETE), one of the big five extinctions documented during the Phanerozoic. It is noteworthy that the ETE seems to be associated with significant $d^{13}C$ perturbations (CIEs), commonly related to the CAMP eruptive phases. The stratigraphic record of these environmental changes has been recently reported from the Upper Triassic bedded chert successions in Japan, deposited within a Paleo-Pacific (Panthalassa) deep basin. The chronology for the Rhaetian pelagic in the Panthalassa Ocean is based on the radiolarian zonation, which is well established in the Upper Triassic bedded chert successions in the Mino Belt, central Japan. Although accurate calibration for the chronostratigraphic stages and substages are established basically by means of ammonites and conodonts, most of the Japanese radiolarian zones were calibrated through correlation with zonal schemes established in other regions, and have not been calibrated conodont biostratigraphy.

Here we present 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 (Hori, 1992; Sugiyama, 1997). Based on the stratigraphic distributions of marker species, four conodont zones were defined: the *Mocina bidentata* Zone, the *Misikella hernsteini* Zone, the *M. posthernsteini* zone, and the *M. ultima* zone, in ascending order. These conodont zones are comparable to the standard Late Norian and Rhaetian conodont zones of western Tethys. The Norian/Rhaetian boundary in the study section is tentatively placed between the last occurrence of a Norian radiolarian species (*Betraccium deweveri*) and the first occurrences of Rhaetian conodont species (*M. posthernsteini*). The intercalibrated conodont—radiolarian biostratigraphy from the section accurately calibrates the radiolarian zones in Japan with standard chronostratigraphic stages and substages.

Keywords: Late Triassic, biostratigraphy, conodont, bedded chert, Mino belt, Panthalassa Ocean