

Middle Triassic Radiolarian and Conodont biostratigraphy in the bedded chert of the Mino Belt

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The Triassic climate is generally considered a period of arid or semi-arid conditions, and there are two humid climate events in the late Anisian (Pelsonian) and late Ladinian (Longobardian) of the Middle Triassic. Although the causes of these humid climate events are uncertain, these events are likely to lead to the radiolarian and conodont diversification during the Middle Triassic. To investigate the response of major pelagic groups (e.g., radiolarians and conodonts) to the Middle Triassic humid climate events, we examined radiolarian and conodont biostratigraphy and obtained geochemical profiles from a Middle Triassic bedded chert sequence (Section O) in the Inuyama area, central Japan. Section O is mainly composed of rhythmical brick-red bedded cherts with a thickness of 21 m, which accumulated in a pelagic, open ocean setting within a low-latitude zone of the Panthalassa Ocean. A total of 65 chert samples were collected from Section O for biostratigraphic study. Our radiolarian biostratigraphy reveals that the six Sugiyama's radiolarian subzones were recognized in the study section: the TR 2C (*Triassocampe deweveri*) to TR 5A (*Capnuchosphaera*) zones, which can be compared to the late Anisian to early Carnian. Based on our radiolarian biostratigraphic data, the radiolarian faunal change from Fassanian (early Ladinian) to Longobardian (late Ladinian) taxa occurred across the thick siliceous claystone bed (4 cm thick) in Section O at 10.5 m above the section base. A geochemical analysis reveals that no significant marine redox changes were observed in the study section. In contrast, changes in biogenic apatite productivity, that originated from marine vertebrates (e.g., conodonts and fish) increased across the Fassanian/Longobardian boundary. Our results suggest that the humid events in Logobardian may have triggered an increase in pelagic vertebrate productivity and the radiolarian faunal turnover in the pelagic realm of the Panthalassa Ocean.

Keywords: Triassic, Radiolaria, Conodont, Ladinian, Anisian, Biostratigraphy