

Chronostratigraphy of the Miocene sequence in the Matsushima area, with reference to warm events in the Japan Sea

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We have revised the chronostratigraphy of the Miocene sequence in the Matsushima area, northeastern Japan, on the basis of updated diatom biochronology and fission track dating. The Miocene sequence in this area is composed of the Matsushimawan and Shida Groups in stratigraphically ascending order. A synthesis of biostratigraphy and chronostratigraphy has revealed that the Miocene sequence in this area are composed of six depositional units that are separated by relatively long hiatuses or unconformities. Of these units, the Middle to Late Miocene sequence of the Shida Group are divided into three units, namely the Mitsuya, Hataya and Kashimadai Formations (13.0-11.4 Ma), the Bangamoriyama Formation (9.9-9.5 Ma) and the Omatsuzawa Formation (8.6-8.0 Ma). The diatom and planktonic foraminiferal assemblages of these units contains warm water species as well as cold water species, suggesting warm water input into this area. Furthermore, Sedimentological study of Yoshida and Tateishi (2003) revealed that the Matsushima area was situated in a strait between the Abukuma and Kitakami Mountains, where a branch of warm water current flowed into the area during the deposition of these formations. The depositional durations of these three units are correlative with three events in the Onnagawa-Teradamari period recognized in the Japan Sea area.