

## Ichnofossils and ichnofabrics of the Kokumoto Formation, Kazusa Group: Depositional environment and benthic paleoecology

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In the Tabuchi section, along the Yoro river in the Boso Peninsula, the Kokumoto Formation (Kazusa Group) represents an expanded well-exposed, continuous marine succession across the Lower-Middle Pleistocene boundary. Since the Tabuchi section contains the Matuyama-Brunhes boundary whose age was highly accurately constrained, it is considered as a candidate for the Global Boundary Stratotype Section and Point (GSSP). In addition, due to the high sedimentation rate and continuous deposition, the Kokumoto Formation is suitable for high-resolution paleoenvironmental studies. However, paleoecological studies of the formation are very few, responses of marine organisms to paleoenvironmental changes remain unclear. Therefore, this study systematically described the trace fossils and ichnofabrics of the Kokumoto Formation of the Tabuchi section. Twelve ichnogenera and another indeterminate U-shaped burrow were recognized from the silty beds of the formation, which are typical components of ichnofacies characterizing the bathyal zone (i.e. *Zoophycos* ichnofacies). In addition, no graphoglyptid trace fossils, which commonly occur in abyssal plain environments, were observed. Based on the trace-fossil assemblage combined with other sedimentological features, it is most likely that the silty beds of the Kokumoto Formation were deposited in a continental slope setting. Furthermore, two types of ichnofabrics were identified, which are *Phycosiphon*-dominated ichnofabric (*Phy* ichnofabric) and *Chondrites-Planolites-Thalassinoides* ichnofabric (*Ch-Pl-Th* ichnofabric). Observation of the thin-sliced slabs revealed the distinctive stratigraphic changes of these two ichnofabrics; namely, both the *Phy*-ichnofabric and *Ch-Pl-Th* ichnofabric occur in the lower and upper part of the Tabuchi section, whereas the *Ch-Pl-Th* ichnofabric is exclusively recognized in the middle part. The vertical change in ichnofabrics is not correlated with changes in sedimentation rate. Instead, the ichnofabrics are well correlated with changes in benthic-food contents, which are estimated by the results of high-resolution XRF analysis. In particular, the lower and upper parts of the Tabuchi section, which are characterized with the presence of *Phy*-ichnofabric, are synchronized with food-poor intervals. Since the *Phycosiphon*-producer is regarded as a grain-selective deposit feeder, which may have effectively ingested organic matter, it is reasonable that the *Phy*-ichnofabric occurs only in food-poor intervals.